DOCUMENT RESUME

ED 255 370 SE 045 464

AUTHOR	Suydam, Marilyn N.
TITLE	Research on Mathematics Education Reported in 1984.
INSTITUTION	ERIC Clearinghouse for Science, Mathematics, and Environmental Education, Columbus Ohio.; National Council of Teachers of Mathematics, Inc., Reston, Va.
SPONS AGENCY	National Inst. of Education (ED), Washington, DC.
PUB DATE	Apr 85
CONTRACT	NIE-400-78-0004
NOTE	90p.
AVAILABLE FROM	National Council of Teachers of Mathematics, Inc., 1906 Association Dr., Reston, VA 22091.
PUB TYPE	Information Analyses - ERIC Information Analysis Products (071) -- Reference Materials - Bibliographies (131) -- Collected Works - Serials (022)
EDRS PRICE	MF01/PC04 Plus Postage.
DESCRIPTORS	Annotated Bibliographies; *Doctoral Dissertations; Educational Research; Elementary Secondary Education; Higher Education; Mathematics Achievement; *Mathematics Curriculum; *Mathematics Education; *Mathematics Instruction
IDENTIFIERS	*Mathematics Education Research

ABSTRACT

This is the fifteenth annual listing of research on mathematics education prepared for the "Journal for Research in Mathematics Education." References are organized alphabetically by author within three categories: research summaries, articles, and dissertations. Included are 33 summaries, 220 articles, and 297 dissertations. Studies focusing on mathematics education are annotated, whereas studies in which mathematics education is not the primary focus are usually not annotated. Annotations generally indicate one principal finding of a study, although most studies have additional findings. Journals searched and the number of articles located in each are listed. Also provided is an index to aid in locating references to designated mathematical topics: achievement, algebra, arithmetic operations, attitudes and anxiety, calculators and computers, cognitive style, diagnosis and remediation, ethnic and social variables, geometry and measurement, learning, learning disabilities, materials, number and numeration, organizing for instruction, problem solving, sequencing, sex differences, and test analysis. Grade or age level is noted for each entry. (MNS)

Marilyn N. Suydam
The Ohio State University

Research on Mathematics Education

Reported in 1984

published by

ERIC Clearinghouse for Science, Mathematics, and
Environmental Education
The Ohio State University
1200 Chambers Road, Room 310
Columbus, OH 43212

April, 1985

This publication was prepared with funding from the National Institute of Education, U.S. Department of Education under contract no. 400-78-0004. The opinions expressed in this report do not necessarily reflect the positions or policies of NIE or U.S. Department of Education.

Table of Contents

Introduction 1

Research Summaries 2

Articles 4

Dissertations 28

Journals Searched 65

Index 68

Research on Mathematics Education

Reported in 1984

Marilyn N. Suydam, The Ohio State University

This 15th annual listing of mathematics education research to appear in JRME presents references alphabetically by author within three categories (research summaries, articles, and dissertations). Grade or age is indicated for each reference, and an index is included to help readers locate studies of particular interest.

Studies focused on mathematics education are annotated, whereas studies in which mathematics education was not the primary focus are usually not annotated. Most annotations indicate one principal finding of a study, although many studies have additional findings of interest. The original report should be checked for other results of a study as well as for information to aid in assessing the validity of the findings.

Helping to locate references in journals not available to me were George Bright and Jeremy Kilpatrick. Indeed, each not only searched several journals, but also wrote the annotations: I truly appreciate their help, as well as that provided on an on-going basis by Beverly Hendrickson. Some references are undoubtedly overlooked, but the attempt is made to be as comprehensive as possible.

Research Summaries

One listing of research reports and 32 articles summarizing research findings were located.

Arlin, Marshall. Time, Equality, and Mastery Learning. Review of Educational Research 54: 65-86; Spring 1984. (--)

Bear, George G. Microcomputers and School Effectiveness. Educational Technology 24: 11-15; January 1984.

Research on effective teaching practices that may generalize to microcomputer use is discussed. (grades K-12)

Bernard, John E. and Bright, George W. Student Performance in Solving Linear Equations. International Journal of Mathematics Education in Science and Technology 15: 399-421; 1984.

Relevant research is cited to clarify a model of student performance in solving linear equations. (--)

Bradley, Claudette. Issues in Mathematics Education for Native Americans and Directions for Research. Journal for Research in Mathematics Education 15: 96-106; March 1984.

This summary of needs includes data showing that Native Americans fall below the norms in enrollment, preparation, and achievement. (--)

Briars, Diane J. and Larkin, Jill H. An Integrated Model of Skill in Solving Elementary Word Problems. Cognition and Instruction 1: 245-296; 1984.

Research is cited to support a computer-implemented model of psychological processes used by children in solving word problems. (primary)

Campbell, Patricia F. Using a Problem-Solving Approach in the Primary Grades. Arithmetic Teacher 32: 11-14; December 1984.

Pertinent evidence from research is presented to describe how primary-level children may gain an understanding of addition and subtraction as well as practice computational skills through one-step problems. (primary)

Clements, Douglas H. Implications of Media Research for the Instructional Application of Computers with Young Children. Educational Technology 24: 7-16; November 1984. (elementary)

Cuevas, Gilberto J. Mathematics Learning in English as a Second Language. Journal for Research in Mathematics Education 15: 134-144; March 1984.

Research on the interaction of language and mathematics learning is reviewed. (--)

Driscoll, Mark. What Research Says. Arithmetic Teacher 31: 34-35,

46, February 1984.

Research on fractions and decimals is reviewed, with the need for concrete materials stressed. (elementary)

Gersten, Russell and Carnine, Doug. Direct Instruction Mathematics: A Longitudinal Evaluation of Low-Income Elementary School Students. Elementary School Journal 84: 395-407; March 1984. (elementary)

Hawkins, Anne S. and Kapadia, Ramesh. Children's Conceptions of Probability--A Psychological and Pedagogical Review. Educational Studies in Mathematics 15: 349-377; November 1984.

What is known about children's intuitions and conceptions of probabilistic notions is reviewed. (--)

Hiebert, James. Children's Mathematics Learning: The Struggle to Link Form and Understanding. Elementary School Journal 84: 497-513; May 1984.

Research on how meaning is developed is linked in this review of number ideas. (elementary)

Johnson, Martin L. Blacks in Mathematics: A Status Report. Journal for Research in Mathematics Education 15: 145-153; March 1984.

The underparticipation and underachievement of black students in mathematics is documented. (--)

Kulik, James A. and Kulik, Chen-Lin C. Effects of Accelerated Instruction on Students. Review of Educational Research 54: 409-425; Fall 1984.

Twenty-six studies on acceleration, including some specific to mathematics, were summarized. (--)

Kulik, James A.; Kulik, Chen-Lin C.; and Bangert, Robert L. Effects of Practice on Aptitude and Achievement Test Scores. American Educational Research Journal 21: 435-447; Summer 1984. (--)

Matthews, Westina. Influences on the Learning and Participation of Minorities in Mathematics. Journal for Research in Mathematics Education 15: 84-95; March 1984.

This review of 24 studies is organized by three types of variables (parent, student, school) that influence learning. (--)

Reyes, Laurie Hart. Affective Variables and Mathematics Education. Elementary School Journal 84: 558-581; May 1984.

Research on self-concept, anxiety, attribution, and other affective factors is reviewed. (elementary)

Reys, Robert E. Mental Computation and Estimation: Past, Present, and Future. Elementary School Journal 84: 548-557; May 1984.

Research results are reviewed and incorporated in this presentation. (elementary)

32: 12; November 1984.

Research on attitudes toward m[illegible]tics is briefly revi[illegible] (elementary)

Suydam, Marilyn N. Estimation and Computation. Arithmetic Teacher 32: 35; December 1984.

Key processes and characteristics of good estimators are included in this brief summary of research. (grades K-12)

Trafton, Paul R. Toward More Effective, Efficient Instruction in Mathematics. Elementary School Journal 84: 514-528; May 1984.

Research on effective teaching practices is reviewed. (elementary)

Trueman, David. What Are the Characteristics of School Phobic Children? Psychological Reports 54: 191-202; February 1984. (--)

Tsang, Sau-Lim. The Mathematics Education of Asian Americans. Journal for Research in Mathematics Education 15: 114-122; March 1984.

Achievement in mathematics of Asian-American students is relatively high. (--)

Valverde, Leonard A. Underachievement and Underrepresentation of Hispanics in Mathematics and Mathematics-Related Careers. Journal for Research in Mathematics Education 15: 123-133; March 1984.

Hispanic students have disproportionately low participation and underachievement in mathematics. (--)

Articles

In this section, 220 articles are listed. The journals searched and the number of articles from each may be found at the end of the total listing.

Acredolo, Curt; Adams, Anne; and Schmid, Jeannine. On the Understanding of the Relationships Between Speed, Duration, and Distance. Child Development 55: 2151-2159; December 1984. (grades 1-5)

Adelson, Beth. When Novices Surpass Experts: The Difficulty of a Task May Increase with Expertise. Journal of Experimental Psychology: Learning, Memory, and Cognition 10: 483-495; July 1984.

Expert computer programmers formed abstract representations of programs, whereas novices formed concrete representations. (college)

Adjei, Kwabena. Transformational Artefact in the Liquid Quantity Conservation Measure Among Ghanaian Students. Journal of Social Psychology 123: 79-89; June 1984. (college freshmen)

Agris, Myrna Skobel and Austin, Joe Dan. Women in School Science and

Mathematics--The Early Years. School Science and Mathematics 84: 386-394; May/June 1984. (adults)

Arlin, Marshall. Time Variability in Mastery Learning. American Educational Research Journal 21: 103-120; Spring 1984.

Learning time variability remained stable or increased under mastery learning conditions. (grades 1-4)

Ashcraft, Mark H.; Fierman, Bennett A.; and Bartolotta, Robin. The Production and Verification Tasks in Mental Addition: An Empirical Comparison. Developmental Review 4: 157-170; June 1984.

Students as early as grade 2 rely on memory retrieval to a significant degree, with no widespread difficulties associated with verification. (grades 1-3, 5, college)

Atwater, Mary M. and Simpson, Ronald D. Cognitive and Affective Variables Affecting Black Freshmen in Science and Engineering at a Predominately White University. School Science and Mathematics 84: 100-112; February 1984. (college freshmen)

Badgett, John L.; Hunkler, Richard F.; and Porter, C. Mack. Authoritarianism and Academic Achievement of Men and Women: A Canonical Profile. Counseling and Values 28: 76-81; January 1984. (college freshmen)

Baroody, Arthur J. The Case of Felicia: A Young Child's Strategies for Reducing Memory Demands During Mental Addition. Cognition and Instruction 1: 109-116; Winter 1984.

Extensive clinical interviews with one child revealed several novel counting strategies, including a counting-all strategy starting with the larger addend. (ages 4-5)

Baroody, Arthur J. More Precisely Defining and Measuring the Order-Irrelevance Principle. Journal of Experimental Child Psychology 38: 33-41; August 1984.

Evidence that a child knows that the order in which elements of a set are enumerated does not affect the cardinal designation of the set is necessary to infer full understanding of the principle. (grades K, 1)

Baroody, Arthur J. Children's Difficulties in Subtraction: Some Causes and Cures. Arithmetic Teacher 32: 14-19; November 1984.

Informal subtraction strategies that children develop are discussed in detail. (preschool, primary)

Baroody, Arthur J. and Gannon, Kathleen E. The Development of the Commutativity Principle and Economical Addition Strategies. Cognition and Instruction 1: 321-339; Summer/Fall 1984.

Children invent labor-saving strategies for addition without necessarily appreciating that addition is commutative. (grade K)

Battista, Michael T. and Krockover, Gerald H. The Effects of Computer

Use in Science and Mathematics Education upon the Computer Literacy of Preservice Elementary Teachers. Journal of Research in Science Teaching 21: 39-46; January 1984.

Using computer assisted instruction in a science course significantly affected attitudes toward computers, while computer programming in a mathematics education course had little or no effect. (elementary preservice)

Battista, Michael T. and Steele, Kathleen J. The Effect of Computer-Assisted and Computer Programming Instruction on the Computer Literacy of High Ability Fifth Grade Students. School Science and Mathematics 84: 649-658; December 1984.

Both a drill-and-practice program and programming instruction improved computer literacy in the affective domain, but only the first improved it in the cognitive domain. (grade 5)

Beall, Dwight and Harty, Harold. Inservice Teacher Reactions to Implementing Microcomputers in Elementary Science and Mathematics Classes. Journal of Computers in Mathematics and Science Teaching 3: 34-38; Summer 1984.

Differences between teachers participating or not participating in workshops on microcomputers were investigated. (elementary in-service)

Becker, Henry Jay. School Uses of Microcomputers: Report No. 3 from a National Survey. Journal of Computers in Mathematics and Science Teaching 3: 26-32; Spring 1984. (grades K-12)

Becker, Henry Jay. School Uses of Microcomputers: Report No. 4 from a National Survey. Journal of Computers in Mathematics and Science Teaching 3: 24-33; Summer 1984. (grades K-12)

Becker, Henry Jay. School Uses of Microcomputers: Report No. 5 from a National Survey. Journal of Computers in Mathematics and Science Teaching 4: 38-42; Fall 1984. (grades K-12)

Behr, Merlyn J.; Wachsmuth, Ipke; Post, Thomas R.; and Lesh, Richard. Order and Equivalence of Rational Numbers: A Clinical Teaching Experiment. Journal for Research in Mathematics Education 15: 323-341; November 1984.

Strategies for comparing three types of fraction pairs were identified. Previous knowledge relating to whole numbers sometimes interfered with learning about fractions. (grade 4)

Bell, Alan; Fischbein, Efraim; and Greer, Brian. Choice of Operation in Verbal Arithmetic Problems: The Effects of Number Size, Problem Structure and Context. Educational Studies in Mathematics 15: 129-147; May 1984.

In multiplication and division problems, the pervasive nature of certain misconceptions, the effects of structural differences among items, and specific effects of context were found. (ages 12-13)

Bergan, John R. et al. Rule Replacement in the Development of Basic

Number Skills. Journal of Educational Psychology 76: 289-299; April 1984.

The development of counting skills is an evolving process in which parts of a relatively simple rule are replaced by features that enable the child to perform an increasingly broad range of counting tasks. (preschool)

Berry, P.; Groeneweg, G.; Gibson, D.; and Brown, R. I. Mental Development of Adults with Down Syndrome. American Journal of Mental Deficiency 89: 252-256; November 1984. (adults)

Bethell-Fox, Charles E.; Lohman, David F.; and Snow, Richard E. Adaptive Reasoning: Componential and Eye Movement Analysis of Geometric Analogy Performance. Intelligence 8: 205-238; July-September 1984.

Subjects shifted strategies in solving geometric analogies as a function of their ability and the difficulty of the item. (ages 14-17)

Bisanz, Jeffrey; Bisanz, Gay L.; and LeFevre, Jo-Anne. Interpretation of Instructions: A Source of Individual Differences in Analogical Reasoning. Intelligence 8: 161-177; April-June 1984.

Ability to solve figural and numerical analogies with incomplete instructions improved with age and as a function of reasoning ability. (grades 4, 6, 8, college)

Bloland, Ruth Marian and Michael, William B. A Comparison of the Relative Validity of a Measure of Piagetian Cognitive Development and a Set of Conventional Prognostic Measures in the Prediction of the Future Success of Ninth- and Tenth-Grade Students in Algebra. Educational and Psychological Measurement 44: 925-943; Winter 1984.

Age, an algebra prognosis test, and mathematics subtests from a standardized achievement test battery appear to be the most promising predictors of success in algebra. (grades 9, 10)

Bradley, Robert H. and Caldwell, Bettye M. The Relation of Infants' Home Environments to Achievement Test Performance in First Grade: A Follow-Up Study. Child Development 55: 803-809; June 1984. (grade 1)

Bregman, Norman J.; Lipscomb, Thomas J.; McAllister, Hunter A.; and Mims, Michael. Sharing Behavior: Effect of Denomination Value and Number. Journal of Genetic Psychology 144: 131-135; March 1984. (grades K, 6)

Briars, Diane and Siegler, Robert S. A Featural Analysis of Preschoolers' Counting Knowledge. Developmental Psychology 20: 607-618; July 1984.

Children aged 4 and 5 knew that word-object correspondence was essential in counting. (ages 3-5)

Burton, Grace M. Revealing Images. School Science and Mathematics

84: 199-207; March 1984.

Perceptions of mathematics were surveyed, with findings discussed by race and sex. (grade 10)

Callahan, Leroy G. and Clements, Douglas H. Sex Differences in Rote-Counting Ability on Entry to First Grade: Some Observations. Journal for Research in Mathematics Education 15: 378-382; November 1984.

How different data-gathering methods and different statistical treatments of data can yield differing results are indicated. (grade 1)

Carpenter, Thomas P.; Matthews, Westina; Lindquist, Mary Montgomery; and Silver, Edward A. Achievement in Mathematics: Results from the National Assessment. Elementary School Journal 84: 485-495; May 1984.

Changes in the achievement of some skills were noted in this review of assessment results. (ages 9, 13, 17)

Carpenter, Thomas P. and Moser, James M. The Acquisition of Addition and Subtraction Concepts in Grades One Through Three. Journal for Research in Mathematics Education 15: 179-202; May 1984.

Children could solve problems using a variety of modeling and counting strategies even before formal instruction, and the invented strategies continued to be used for several years. (grades 1-3)

Carr, Ken and Katterns, Bob. Does the Number Line Help? Mathematics in School 13: 30-34; September 1984.

New Zealand students performed better on number line tasks than did U.S. students, but a large proportion of students had difficulties. (ages 9, 13)

Carter, Launor F. The Sustaining Effects Study of Compensatory and Elementary Education. Educational Researcher 13: 4-13; August/September 1984. (elementary)

Chapman, James W.; Silva, Phil A.; and Williams, Sheila M. Academic Self-Concept: Some Developmental and Emotional Correlates in Nine-Year-Old Children. British Journal of Educational Psychology 54: 284-292; November 1984. (age 9)

Charles, Randall I. and Lester, Frank K., Jr. An Evaluation of a Process-Oriented Instructional Program in Mathematical Problem Solving in Grades 5 and 7. Journal for Research in Mathematics Education 15: 15-34; January 1984.

Experimental classes scored significantly higher on ability to understand problems, plan solution strategies, and get correct results. (grades 5, 7)

Choroszy, Melisa; Powers, Stephen; and Douglas, Peggy. The Factorial Validity of the Mathematics Attribution Scale. Educational and Psychological Measurement 44: 739-742; Fall 1984.

Hypothesized dimensions of attributions for success and failure were not found. (college)

Christie, Daniel; DeWitt, Ruth Ann; Kaltenbach, Pauline; and Reed, Daniel. Hyperactivity in Children: Evidence for Differences Between Parents' and Teachers' Perceptions of Predominant Features. Psychological Reports 54: 771-774; June 1984. (grades 3, 4)

Clarkson, P. and Leder, G. C. Causal Attributions for Success and Failure in Mathematics: A Cross Cultural Perspective. Educational Studies in Mathematics 15: 413-422; November 1984. (grade 10)

Clements, Douglas H. Training Effects on the Development and Generalization of Piagetian Logical Operations and Knowledge of Number. Journal of Educational Psychology 76: 766-777; October 1984. (age 4)

Clute, Pamela S. Mathematics Anxiety, Instructional Method, and Achievement in a Survey Course in College Mathematics. Journal for Research in Mathematics Education 15: 50-58; January 1984.

Students with a high level of mathematics anxiety had significantly lower achievement than students with low anxiety. Those with high anxiety benefited more from an expository approach and those with low anxiety from a discovery approach. (college)

Coates, Deborah L. and Lewis, Michael. Early Mother-Infant Interaction and Infant Cognitive Status as Predictors of School Performance and Cognitive Behavior in Six-Year-Olds. Child Development 55: 1219-1230; August 1984. (age 6)

Coladarci, Theodore and Gage, N. L. Effects of a Minimal Intervention on Teacher Behavior and Student Achievement. American Educational Research Journal 21: 539-555; Fall 1984. (grades 4-6)

Cooper, Lynn A. and Shepard, Roger N. Turning Something Over in the Mind. Scientific American 251: 106-107, 110-114; December 1984.

Evidence of a mental process that models the rotation of objects in the physical world is given. (?)

Corbitt, Mary Kay. When Students Talk . . . Arithmetic Teacher 31: 16-20; April 1984.

The importance of mathematics, reasons why students liked or disliked mathematics, and their rating of topics are reported. (grade 8)

Cowan, Richard. Children's Relative Number Judgments: One-to-One Correspondence, Recognition of Noncorrespondence, and the Influence of Cue Conflict. Journal of Experimental Child Psychology 38: 515-532; December 1984.

Children were found to respond to local rather than global density differences and to benefit from perceptual aids on both large and small number displays. (age 5)

Croie, John D. and Krehbiel, Gina. Effects of Academic Tutoring on the Social Status of Low-Achieving, Socially Rejected Children. Child Development 55: 1465-1478; August 1984. (grades 3-5)

Dalton, David W. and Hannafin, Michael J. The Role of Computer-Assisted Instruction in Affecting Learner Self-Esteem: A Case Study. Educational Technology 24: 42-44; December 1984.

No significant differences among types of reinforcement were found. (grade 8)

Darch, Craig; Carnine, Doug; and Gersten, Russell. Explicit Instruction in Mathematics Problem Solving. Journal of Education 1 Research 77: 351-359; July/August 1984.

A significant positive effect was found for the explicit translation strategy on the posttest; on a test two weeks later, only students who also received extra review lessons performed significantly better. (grade 4)

Dash, Udaya and Maguire, Thomas. A Detailed Analysis of Group Differences on the California Short-Form Test of Mental Maturity Between 1956 and 1977. Alberta Journal of Educational Research 30: 95-103; June 1984. (grade 3)

Deboer, George E. A Study of Gender Effects in the Science and Mathematics Course-Taking Behavior of a Group of Students Who Graduated from College in the Late 1970s. Journal of Research in Science Teaching 21: 95-103; January 1984.

Women took fewer science and mathematics courses than men, but performed at a higher level both in high school and college. (college)

Dickinson, Donald J. and Adcox, Sandy. Program Evaluation of a School Consultation Program. Psychology in the Schools 21: 336-342; July 1984. (elementary)

Dreyfus, Tommy and Eisenberg, Theodore. Intuitions on Functions. Journal of Experimental Education 52: 77-85; Winter 1984.

High-ability students tended toward a graphical approach to notions of functions, while low-ability students were attracted to pictorial and tabular presentations. (grades 7, 8)

Dudley, Alan. The Effects of Time and Data Permutation on the Solution Strategies of First Grade Children. Focus on Learning Problems in Mathematics 6: 51-78; Winter and Spring 1984.

Strategies for solving addition and subtraction problems developed over six months and as a function of problem type and order of data. (grade 1)

Dye, Janet S. Early Education Matters: A Study of Pre-School Curriculum Content. Educational Research 26: 95-105; June 1984. (nursery school, age 6)

Eaves, Ronald C. and Simpson, Robert G. The Concurrent Validity of the Peabody Individual Achievement Test Relative to the KeyMath

Diagnostic Arithmetic Test Among Adolescents. Psychology in the Schools 21: 165-167; April 1984.

The concurrent validity of the two tests was supported. (adolescents)

Edge, Orlyn P. and Friedberg, Stephen H. Factors Affecting Achievement in the First Course in Calculus. Journal of Experimental Education 52: 136-140; Spring 1984.

Algebraic skills and high school rank play a significant role in predicting calculus achievement. (college)

Edwards, Jo. Raelene, Marjorie and Betty: Success of Girls and Boys in the Australian Mathematics Competition. Australian Mathematics Teacher 40: 11-13; July 1984. (grades 7-12)

Enochs, Larry G. and Gabel, Dorothy L. Preservice Elementary Teachers' Conceptions of Volume. School Science and Mathematics 84: 670-680; December 1984.

A large percentage did not understand volume concepts and could not distinguish volume from surface area. (elementary preservice)

Ervin, Leroy; Hobrebe, Mark C.; Dwinell, Patricia L.; and Newman, Isadore. Comparison of the Prediction of Academic Performance for College Developmental Students and Regularly Admitted Students. Psychological Reports 54: 319-327; February 1984. (college freshmen)

Ethington, Corinna A. and Wolfle, Lee M. Sex Differences in a Causal Model of Mathematics Achievement. Journal for Research in Mathematics Education 15: 361-377; November 1984.

Sex had a significant effect on mathematics achievement even after controlling for sex differences in spatial abilities and background and interest in mathematics. (grade 12)

Fahy, Patrick J. Learning About Computerized Instruction with Adults: One School's Trials, Errors, and Successes. Educational Technology 24: 11-16; July 1984. (adults)

Fischbein, E. and Gazit, A. Does the Teaching of Probability Improve Probabilistic Intuitions? Educational Studies in Mathematics 15: 1-24; February 1984.

Most of the notions in a developed program on probability were too difficult for fifth graders; 60-70 per cent in grade 6 and 80-90 per cent in grade 7 were able to understand the concepts, however. (grades 5-7)

Flexer, Barbara K. Predicting Eighth-Grade Algebra Achievement. Journal for Research in Mathematics Education 15: 352-360; November 1984.

Algebra prognosis test scores and performance in seventh-grade mathematics best predicted algebra grades, whereas IQ, problem-solving, and prognosis scores best predicted standardized test

achievement. (grade 8)

Foxman, Derek; Joffe, Lynn; and Ruddock, Graham. Problem Solving: The APU Approach. Mathematics in School 13: 28-32; May 1984.

Pupils who "home in" insightfully on the broad objectives of a problem tend to produce better results than those who sectionalize individual aspects and treat them separately. (ages 11, 15)

Foxman, Derek and Ruddock, Graham. Concepts and Skills: Line Symmetry and Angle. Mathematics in School 13: 9-13; March 1984.

Errors in students' concepts of symmetry and angle are discussed. (ages 11, 15)

Frank, Alan R. and Keith, Timothy Z. Academic Abilities of Persons Entering and Remaining in Special Education. Exceptional Children 51: 76-77; September 1984. (preservice teachers)

Fredrick, Dennis; Mishler, Carol; and Hogan, Thomas P. College Freshmen Mathematics Abilities: Adults Versus Younger Students. School Science and Mathematics 84: 327-336; April 1984.

Younger freshmen scored significantly higher than older (adult) freshmen on many topics. (college freshmen)

Fulkerson, Katherine F.; Galassi, John P.; and Galassi, Merna D. Relation Between Cognitions and Performance in Math Anxious Students: A Failure of Cognitive Theory. Journal of Counseling Psychology 31: 376-382; July 1984.

Second-step cognitive variables (including review of information, strategic calculations, conclusions) accounted for a significant amount of variance in solving problems, beyond that of first-step cognitions (attention, self-facilitation, irrelevancies, self-inhibition). (college)

Furnham, Adrian. Getting a Job: School-Leavers' Perceptions of Employment Prospects. British Journal of Educational Psychology 54: 293-305; November 1984. (age 16)

Gold, Ron. Class-Inclusion Failure: Conceptual Deficit or Communicational Deficit? Genetic Psychology Monographs 109: 121-148; February 1984. (ages 5, 6, 8, 9)

Gratz, Elizabeth and Pulley, Jerry L. A Gifted and Talented Program for Migrant Students. Roeper Review 6: 147-149; February 1984. (grades 9-12)

Griffiths, H. B. and McLone, R. R. A Critical Analysis of University Examinations in Mathematics. Part I: A Problem of Design. Educational Studies in Mathematics 15: 291-311; August 1984. (college)

Griffiths, H. B. and McLone, R. R. A Critical Analysis of University Examinations in Mathematics. Part II: A Problem of Evaluation. Educational Studies in Mathematics 15: 423-442; November 1984. (college)

Griswold, Philip A. Elementary Students' Attitudes During 2 Years of Computer-Assisted Instruction. American Educational Research Journal 21: 737-754; Winter 1984. (grades 4, 5)

Gullo, Dominic F. and Clements, Douglas H. Differences in Achievement Patterns for Boys and Girls in Kindergarten and First Grade: A Longitudinal Study. Psychological Reports 54: 23-27; February 1984. (grades K, 1)

Gullo, Dominic F. and Clements, Douglas H. The Effects of Kindergarten Schedule on Achievement, Classroom Behavior, and Attendance. Journal of Educational Research 78: 51-56; September/October 1984. (grade K)

Guskey, Thomas R. The Influence of Change in Instructional Effectiveness upon the Affective Characteristics of Teachers. American Educational Research Journal 21: 245-259; Summer 1984. (intermediate and secondary teachers)

Hardiman, Pamela Thibodeau et al. Usefulness of a Balance Model in Understanding the Mean. Journal of Educational Psychology 76: 792-801; October 1984. (college)

Hart, Kathleen. Which Comes First—Length, Area, or Volume? Arithmetic Teacher 31: 16-18, 26-27; May 1984.

Results from an English survey of children's measurement concepts are reported. (ages 12-15)

Harty, Harold; Adkins, Darlene M.; and Sherwood, Robert D. Predictability of Giftedness Identification Indices for Two Recognized Approaches to Elementary School Gifted Education. Journal of Educational Research 77: 337-342; July/August 1984. (grades 2, 3)

Hess, Robert D.; Holloway, Susan D.; Dickson, W. Patrick; and Price, Gary G. Maternal Variables as Predictors of Children's School Readiness and Later Achievement in Vocabulary and Mathematics in Sixth Grade. Child Development 55: 1902-1912; October 1984. (grade 6)

Hess, Robert D. and McDevitt, Theresa M. Some Cognitive Consequences of Maternal Intervention Techniques: A Longitudinal Study. Child Development 55: 2017-2030; December 1984. (ages 4, 5, 6, 12)

Hiebert, James. Why Do Some Children Have Trouble Learning Measurement Concepts? Arithmetic Teacher 31: 19-24; March 1984.

The effect of conservation and transitivity on learning the concept of measurement was explored. (grade 1)

Hill, Douglas M. and Redden, Michael G. Spatial Puzzles and the Assessment of Children's Problem-Solving Performance. School Science and Mathematics 84: 475-483; October 1984.

Boys attained higher scores on a measure of cognitive style and took less time to complete the jigsaw task. (grade 5)

Hinojosa, David and Miller, Louie. Grade Level Attainment Among Migrant Farm Workers in South Texas. Journal of Educational Research 77: 346-350; July/August 1984. (secondary)

Horn, Elizabeth A. and Walberg, Herbert J. Achievement and Interest as Functions of Quantity and Level of Instruction. Journal of Educational Research 77: 227-232; March/April 1984.

Achievement appears to depend not only on the number but also the level of mathematics courses, as well as traditional teaching method, television viewing, home environment, socioeconomic status, sex, and ethnicity. (age 17)

Hunting, Robert P. Understanding Equivalent Fractions. Journal of Science and Mathematics Education in S.E. Asia 7: 26-33; July 1984.

Possession of appropriate strategies for constructing physical representations for fractions was found to be important for solving equivalence problems. (grades 4, 6, 8)

Ivarie, Judith; Hogue, Dorothea; and Brulle, Andrew R. An Investigation of Mainstream Teacher Time Spent with Students Labeled Learning Disabled. Exceptional Children 51: 142-149; October 1984. (grades 1-5, secondary)

Jackson, Douglas N.; Holden, Ronald R.; Locklin, Ralph H.; and Marks, Edmond. Taxonomy of Vocational Interests of Academic Major Areas. Journal of Educational Measurement 21: 261-275; Fall 1984. (college)

Joffe, Lynn and Foxman, Derek. Attitudes and Sex Differences: Some APU Findings. Mathematics in School 13: 22-26; September 1984.

Opinions on mathematics are presented, and sex differences in attitudes and achievement are discussed. (ages 11, 15)

Jones, Lyle V.; Burton, Nancy W.; and Davenport, Ernest C., Jr. Monitoring the Mathematics Achievement of Black Students. Journal for Research in Mathematics Education 15: 154-164; March 1984.

Findings from the 1973 and 1978 national assessments are reviewed, with differences between means of black and white students analyzed. (ages 9, 13, 17)

Kail, Robert; Stevenson, Michael R.; and Black, Kathryn N. Absence of a Sex Difference in Algorithms for Spatial Problem Solving. Intelligence 8: 37-46; January-March 1984.

Men were faster than women in mental rotation of objects, but the sexes did not differ in the procedures used to solve rotation problems. (college)

Kingma, Johannes. A Comparison of Four Methods of Scaling for the Acquisition of Early Number Concept. Journal of General Psychology 110: 23-45; January 1984. (grades K, 1)

Kingma, Johannes. The Influence of Task Variations in Seriation

Research: Adding Irrelevant Cues to the Stimulus Material. Journal of Genetic Psychology 144: 241-253; June 1984. (grades K-6)

Kingma, Johannes. The Sequence of Development of Transitivit , Correspondence, and Seriation. Journal of Genetic Psychology 14 : 271-284; June 1984. (grades K-6)

Kingma, Johannes. Traditional Intelligence, Piagetian Tasks, and Initial Arithmetic in Kindergarten and Primary School Grade One. Journal of Genetic Psychology 145: 49-60; September 1984. (grades K-1)

Kingma, Johannes and Koops, Willem. Consequences of Task Variations in Cardination Research. Genetic Psychology Monographs 109: 77-94; February 1984. (grades K, 1)

Kyllonen, Patrick C. et al. Effects of Aptitudes, Strategy Training, and Task Facets on Spatial Task Performance. Journal of Educational Psychology 76: 130-145; February 1984. (secondary)

Langer, Philip; Kalk, John Michael; and Searls, Donald T. Age of Admission and Trends in Achievement: A Comparison of Blacks and Caucasians. American Educational Research Journal 21: 61-78; Spring 1984. (grades 4, 8, 11)

Larson, Carol Novillis and Slaughter, Helen. The Use of Manipulatives and Games in Selected Elementary School Classrooms, from an Ethnographic Study. Focus on Learning Problems in Mathematics 6: 31-49; Winter and Spring 1984.

Ethnographic observations of nine classrooms in eight schools revealed a paucity of individualization and grouping with manipulatives and games. (grades 2-5)

Leder, Gilah C. Sex Differences in Attributions of Success and Failure. Psychological Reports 54: 57-58; February 1984. (grade 10)

Lessen, Elliott I. and Cumblad, Carla L. Alternatives for Teaching Multiplication Facts. Arithmetic Teacher 31: 46-48; January 1984.

A performance record helped a child learn from drill on multiplication facts. (grade 5)

Levin, Iris; Wilkening, Friedrich; and Dembo, Yoram. Development of Time Quantification: Integration and Nonintegration of Beginnings and Endings in Comparing Durations. Child Development 55: 2160-2172; December 1984. (ages 7, 10, 13)

Levitt, Eugene E. and Hutton, Lucreda H. A Psychometric Assessment of the Mathematics Anxiety Rating Scale. International Review of Applied Psychology 33: 233-242; April 1984.

Thirty-one items on the MARS instrument were identified as weaker than the remaining 67 items. (college)

Licht, Barbara G. and Dweck, Carol S. Determinants of Academic Achievement: The Interaction of Children's Achievement

Orientations with Skill Area. Developmental Psychology 20: 628-636; July 1984. (grade 5)

Lindsey, Jimmy D. and Armstrong, Stephen W. Performance of EMR and Learning-Disabled Students on the Brigance, Peabody, and Wide Range Achievement Tests. American Journal of Mental Deficiency 89: 197-201; September 1984. (elementary, secondary)

Lockheed, Marlaine E. and Harris, Abigail M. Cross-Sex Collaborative Learning in Elementary Classrooms. American Educational Research Journal 21: 275-294; Summer 1984. (grades 4, 5)

Loranger, Michel; Gosselin, Denise; and Kaley, Richard. The Effects of Cognitive Style and Course Content on Classroom Social Behavior. Psychology in the Schools 21: 92-96; January 1984. (ages 12-14)

Lunn, Joan Barker. Junior School Teachers: Their Methods and Practices. Educational Research 26: 178-188; November 1984. (junior school teachers)

Madden, John; O'Hara, John; and Levenstein, Phyllis. Home Again: Effects of the Mother-Child Home Program on Mother and Child. Child Development 55: 636-647; April 1984. (elementary)

Maddux, Cleborne D.; Cates, Dennis; and Sowell, Virginia. Fingermath for the Visually Impaired: An Intrasubject Design. Journal of Visual Impairment and Blindness 78: 7-10; January 1984.

Three blind children proficient in the use of the abacus learned Fingermath rapidly. (elementary)

Maher, Charles A. Handicapped Adolescents as Cross-Age Tutors: Program Description and Evaluation. Exceptional Children 51: 56-63; September 1984. (elementary, secondary)

Marjoribanks, Kevin. Ethnicity, Family Environment and Adolescents' Aspirations: A Follow-Up Study. Journal of Educational Research 77: 166-171; January/February 1984. (age 11)

Marsh, Herbert W. and O'Neill, Rosalie. Self Description Questionnaire III: The Construct Validity of Multidimensional Self-Concept Ratings by Late Adolescents. Journal of Educational Measurement 21: 153-174; Summer 1984. (grade 11, college)

Marsh, Herbert W. et al. The Relationship Between Dimensions of Self-Attribution and Dimensions of Self-Concept. Journal of Educational Psychology 76: 3-32; February 1984. (grade 5)

Marshall, Sandra P. Sex Differences in Children's Mathematics Achievement: Solving Computations and Story Problems. Journal of Educational Psychology 76: 194-204; April 1984.

Probability for success is greater for girls in solving computations and for boys in solving story problems. (grade 6)

Martin, Ruth E. and Light, Harriett K. Sex-Role Orientation of

University Students. Psychological Reports 54: 316; February 1984. (college)

Matthews, Westina; Carpenter, Thomas P.; Lindquist, Mary Montgomery; and Silver, Edward A. The Third National Assessment: Minorities and Mathematics. Journal for Research in Mathematics Education 15: 165-171; March 1984.

Black and Hispanic students continued to score below the national level, but made greater gains than white students since the previous assessment. (ages 9, 13, 17)

May, Deborah C. and Welch, Edward L. The Effects of Developmental Placement and Early Retention on Children's Later Scores on Standardized Tests. Psychology in the Schools 21: 381-385; July 1984. (elementary)

McGonigle, Brendan and Chalmers, Margaret. The Selective Impact of Question Form and Input Mode on the Symbolic Distance Effect in Children. Journal of Experimental Child Psychology 37: 525-554; June 1984. (ages 6, 9)

McGue, Matt; Bouchard, Thomas J., Jr.; Lykken, David T.; and Feuer, Dale. Information Processing Abilities in Twins Reared Apart. Intelligence 8: 239-258; July-September 1984. (adults)

McKernan, Jim. Curriculum Development in The Republic of Ireland. Journal of Curriculum Studies 16: 233-246; July-September 1984. (ages 12-18)

Mendelson, Morton J. Attention to Quantitative and Configural Properties of Abstract Visual Patterns by Children and Adults. Child Development 55: 1789-1798; October 1984. (grades 2, 4, 6, college)

Menis, Yosef. Improvement in Student Attitudes and Development of Scientific Curiosity by Means of Computer Studies. Educational Technology 24: 31-32; May 1984. (age 14)

Meyer, Linda A. Long-Term Academic Effects of the Direct Instruction Project Follow Through. Elementary School Journal 84: 380-394; March 1984. (--)

Michie, Susan. Number Understanding in Preschool Children. British Journal of Educational Psychology 54: 245-253; November 1984. (age 4)

Miller, Kevin; Perlmutter, Marion; and Keating, Daniel. Cognitive Arithmetic: Comparison of Operations. Journal of Experimental Psychology: Learning, Memory, and Cognition 10: 46-60; January 1984.

Reaction times of adults in retrieving basic number facts supported the model of a tablelike network of stored answers. (adults)

Miller, Louise B. and Bizzell, Rondeall P. Long-Term Effects of Four

Preschool Programs: Ninth- and Tenth-Grade Results. Child Development 55: 1570-1587; August 1984. (grades 9, 10)

Minato, Saburoh and Yanase, Shyoichi. On the Relationship Between Students' Attitudes Towards School Mathematics and Their Levels of Intelligence. Educational Studies in Mathematics 15: 313-320; August 1984.

The attitude of low intelligence students is more important and has a greater effect in magnitude than attitude of high intelligence students. (grade 8)

Mitchell, Charles E. The Importance of Three Years of High School Mathematics. Mathematics Teacher 77: 510-513; October 1984.

Many college students in business or precalculus mathematics or statistics courses had not taken three years of high school mathematics because the courses were not deemed important, were not required, or conflicted with others. (college)

Mohan, Philip J. The Meaning of Indefinite Number Terms for Preschool Children. Journal of Genetic Psychology 145: 147-148; September 1984. (ages 3-6)

Monk, David H. and Ibrahim, Mohd Ariffin. Patterns of Absence and Pupil Achievement. American Educational Research Journal 21: 295-310; Summer 1984.

Patterns of absence, and gross quantity of absence, were related to student performance in algebra. (grade 9)

Morehead, Gloriana. Nice Girls Don't Do Maths. Mathematics in School 13: 16-17; November 1984. (grade 5)

Moyer, John C.; Moyer, Margaret B.; Sowder, Larry; and Threadgill-Sowder, Judith. Story Problem Formats: Verbal Versus Telegraphic. Journal for Research in Mathematics Education 15: 64-68; January 1984.

The telegraphic format did not facilitate performance on story problems; the format with conventional syntax appeared to be easier to interpret. (grades 3-7)

Moyer, John C.; Sowder, Larry; Threadgill-Sowder, Judith; and Moyer, Margaret B. Story Problem Formats: Drawn Versus Verbal Versus Telegraphic. Journal for Research in Mathematics Education 15: 342-351; November 1984.

The drawn format was easier than the other two formats; its advantage was greater for low-ability readers than for high-ability readers. (grades 3-7)

Muth, K. Denise. Solving Arithmetic Word Problems: Role of Reading and Computational Skills. Journal of Educational Psychology 76: 205-210; April 1984.

Extraneous information and syntactical complexity accounted for 54 per cent of the variance in solution accuracy. (grade 6)

Nash, Chris. Identity and Equivalence Conservation: Longitudinal Field Studies in Sequence and Significance. British Journal of Educational Psychology 54: 1-7; February 1984. (grades K-6)

Newman, Richard S. Children's Numerical Skill and Judgments of Confidence in Estimation. Journal of Experimental Child Psychology 37: 107-123; February 1984.

Counting skill was related not only to accuracy in estimating, but also to appropriateness of confidence in estimates. (grade 10)

Newman, Richard S. Children's Achievement and Self-Evaluation in Mathematics: A Longitudinal Study. Journal of Educational Psychology 76: 857-873; October 1984.

Developmental differences in the causal relationship between achievement and self-ratings were found. (grades 2, 5, 10)

Newman, Richard S. and Berger, Carl F. Children's Numerical Estimation: Flexibility in the Use of Counting. Journal of Educational Psychology 76: 55-64; February 1984.

Developmental differences in accuracy of estimation, fluency in counting, and sophistication of self-reported strategy use were found. (primary)

Nicholson, Tom. Experts and Novices: A Study of Reading in the High School Classroom. Reading Research Quarterly 19: 436-451; Summer 1984. (junior high)

Niklason, Lucille B. Nonpromotion: A Pseudoscientific Solution. Psychology in the Schools 21: 485-499; October 1984. (elementary)

Obrzut, Ann; Nelson, R. Brett; and Obrzut, John E. Early School Entrance for Intellectually Superior Children: An Analysis. Psychology in the Schools 21: 71-77; January 1984. (elementary)

Offenbach, Stuart I.; Gruen, Gerald E.; and Caskey, Bradley J. Development of Proportional Response Strategies. Child Development 55: 963-972; June 1984. (grades K, 2, 4, 6)

Olson, Meredith. Instructional Strategy for the Severely Gifted. Focus on Learning Problems in Mathematics 6: 87-109; Summer 1984.

Observations and tests suggested gifted mathematics students fell into types associated with interest in inquiry and with spatial abilities. (?)

Olstad, Roger G. and Beal, Jack L. The Science and Mathematics Teacher Shortage: A Study of Recent Graduates. Science Education 68: 397-402; July 1984.

Reasons why graduates never taught, left teaching, or stayed in the profession were ascertained. (secondary teachers)

Onyehalu, Anthony S. Sex Differences in the Acquisition of Conservation by Selected Nigerian Children. Journal of Negro Education 53: 70-77; Winter 1984. (grades 1, 2)

Orton, A. Understanding Rate of Change. Mathematics in School 13: 23-26; November 1984.

Results from a large-scale study of understanding of calculus concepts are presented. (sixth form, college)

Parsons, Jacquelynne E.; Adler, Terry; and Meece, Judith L. Sex Differences in Achievement: A Test of Alternate Theories. Journal of Personality and Social Psychology 46: 26-43; January 1984. (grades 8-10)

Pattison, Philippa and Grieve, Norma. Do Spatial Skills Contribute to Sex Differences in Different Types of Mathematical Problems? Journal of Educational Psychology 76: 678-689; August 1984.

The sex difference magnitude on mathematics tests was not diminished by taking spatial and linguistic scores into account. (grades 10, 12)

Peterson, Penelope L.; Swing, Susan R.; Stark, Kevin D.; and Waas, Gregory A. Students' Cognitions and Time on Task During Mathematics Instruction. American Educational Research Journal 21: 487-515; Fall 1984.

Students' reports of attention, understanding, and cognitive processes were more valid indicators of classroom learning than were observers' judgments of time on task. (grade 5)

Phillips, C. J. and Marvelly, Ann. Basic Educational Skills of Asian Children at the End of Infant Schooling. Educational Research 26: 36-45; February 1984. (age 7)

Poltrock, Steven E. and Brown, Polly. Individual Differences in Visual Imagery and Spatial Ability. Intelligence 8: 93-138; April-June 1984.

Responses to spatial tasks, image tasks, and an imagery questionnaire were interpreted as indicating that visualization requires high-quality images that can be efficiently transformed and inspected. (college)

Poltrock, Steven E. and Schwartz, David R. Comparative Judgments of Multidigit Numbers. Journal of Experimental Psychology: Learning, Memory, and Cognition 10: 32-45; January 1984.

Multidigit numbers are compared by comparing digits sequentially rather than simultaneously or by comparing internal representations. (adults)

Powell, Brian and Steelman, Lala Carr. Variations in State SAT Performance: Meaningful or Misleading? Harvard Educational Review 54: 389-412; November 1984. (grade 12)

Powers, Stephen; Douglas, Peggy; and Choroszy, Melisa. A Reliability and Validity Investigation of the Mathematics Attribution Scale. Educational and Psychological Measurement 44: 733-737; Fall 1984.

The median reliability of the eight subscales was .60. Clear

patterns of factor structure were not found. (age 16)

Powers, Stephen and Rossman, Mark H. Attributions for School Achievement of Low-Achieving Indian and Caucasian Community College Students. Psychological Reports 55: 423-428; October 1984. (community college)

Quinn, Bill; Van Mondfrans, Adrian P.; and Worthen, Blaine R. Cost-Effectiveness of Two Math Programs as Moderated by Pupil SES. Educational Evaluation and Policy Analysis 6: 39-52; Spring 1984.

The goal-based, individualized program was substantially more cost-effective for middle to lower socioeconomic levels, while text mathematics was modestly more cost-effective for high SES students. (grade 5)

Ravn, Karen E. and Gelman, Susan A. Rule Usage in Children's Understanding of "Big" and "Little." Child Development 55: 2141-2150; December 1984. (ages 3-5)

Richards, Herbert C.; Gaver, Donna; and Golicz, Heidi. Academically Unpredictable School Children: Their Attitudes Toward School Subjects. Journal of Educational Research 77: 273-276; May/June 1984. (grade 4)

Rogers, P. J. Playway Mathematics: Theory, Practice, and Some Results. Educational Research 26: 200-207; November 1984.

Playing games involving factorization helped children learn, retain, and transfer. (grade 1)

Rohrkemper, Mary M. and Bershon, Barbara L. Elementary School Students' Reports of the Causes and Effects of Problem Difficulty in Mathematics. Elementary School Journal 85: 127-147; September 1984.

Interviews with pupils identified perceived difficulties and inner speech reactions. (grades 3-6)

Rosser, Rosemary A.; Horan, Patricia F.; Mattson, Sandra L.; and Mazzeo, John. Comprehension of Euclidean Space in Young Children: The Early Emergence of Understanding and Its Limits. Genetic Psychology Monographs 110: 21-41; August 1984. (ages 3-5)

Ruddock, Graham; Mason, Keith; and Foxman, Derek. Concepts and Skills: Decimal Place Value. Mathematics in School 13: 24-28; January 1984.

Ignoring the decimal point and "largest is smallest" were the two most common errors made when ordering decimals. Positioning the decimal point incorrectly was associated with errors in computation. (ages 11, 15)

Russell, Robert L. and Ginsburg, Herbert P. Cognitive Analysis of Children's Mathematics Difficulties. Cognition and Instruction 1: 217-244; Spring 1984.

Children of normal intelligence having difficulty in mathematics

were found to have severe difficulties with number facts but not with knowledge of basic mathematical concepts or non-algorithmic procedures. (grades 3, 4)

Russell, Sheila. A Captive Audience? Mathematics in School 13: 31-34; January 1984.

Girls ranked mathematics as less useful than boys did; enjoyment and encouragement by teachers are important factors in continued study of mathematics. (sixth form)

Russell, Tommy; Brunson, Larry DuRand; and Bryant, Cynthia Ann. Effects of Verbal-Mediated Modeling on Concrete-Operational Reasoning for a Sample of ESN Children. Psychology in the Schools 21: 504-511; October 1984. (ages 14-21)

Sadowski, Barbara R. and McIlveen, Delayne Houston. Diagnosis and Remediation of Sentence-Solving Error Patterns. Arithmetic Teacher 31: 42-45; January 1984.

Error patterns appeared less frequently after instruction, but recurred on retention tests. (grades 4, 5)

Sai, Koo Phon and Inder, Walter R. D. Investigations on Multiplication of Fractions. Journal of Science and Mathematics Education in S.E. Asia 7: 34-41; July 1984.

Models with continuous materials, discontinuous materials, and number lines were all understood, but the students preferred the first two. (grade 6)

Sandoval, Jonathan. Repeating the First Grade: How the Decision Is Made. Psychology in the Schools 21: 457-462; October 1984. (grade 1)

Sapp, Gary L.; Chissom, Brad S.; and Horton, William O. An Investigation of the Ability of Selected Instruments to Discriminate Areas of Exceptional Class Designation. Psychology in the Schools 21: 258-263; April 1984. (mean age 10)

Sassenrath, Julius; Croce, Michelle; and Penaloza, Manuel. Private and Public School Students: Longitudinal Achievement Differences? American Educational Research Journal 21: 557-563; Fall 1984. (secondary)

Saxe, Geoffrey B.; Gearhart, Maryl; and Guberman, Steven R. The Social Organization of Early Number Development. New Directions for Child Development 23: 19-30; March 1984. (ages 2-5)

Schneider, Barry H. and Byrne, Barbara M. Predictors of Successful Transition from Self-Contained Special Education to Regular Class Settings. Psychology in the Schools 21: 375-380; July 1984. (ages 8-15)

Schneider, Wolfgang and Treiber, Bernhard. Classroom Differences in the Determination of Achievement Changes. American Educational Research Journal 21: 195-211; Spring 1984. (grade 6)

Schulz, Charles E. A Survey of Colleges and Universities Regarding Entrance Requirements in Computer-Related Areas. Mathematics Teacher 77: 519-521; October 1984.

Typing skill and knowledge of a programming language were most frequently desired for incoming freshmen. (college freshmen)

Schunk, Dale H. Enhancing Self-Efficacy and Achievement Through Rewards and Goals: Motivational and Informational Effects. Journal of Educational Research 78: 29-34; September/October 1984.

Combining rewards with goals resulted in the highest self-efficacy and division performance. (ages 9-11)

Scott, Kathryn P. Effects of an Intervention on Middle School Pupils' Decision Making, Achievement, and Sex Role Flexibility. Journal of Educational Research 77: 369-375; July/August 1984. (grades 6-8)

Seddon, G. M.; Eniaiyeju, P. A.; and Jusoh, I. The Visualization of Rotation in Diagrams of Three-Dimensional Structures. American Educational Research Journal 21: 25-38; Spring 1984. (secondary)

Seiffert, Edward H. and Beck, John J., Jr. Relationships Between Task Time and Learning Gains in Secondary Schools. Journal of Educational Research 78: 5-10; September/October 1984.

The lecture/discussion method of instruction yielded the highest correlation (.46) with achievement; seatwork was negatively correlated. (secondary)

Sheley, Joseph F. Evaluation of the Centralized, Structured, After-School Tutorial. Journal of Educational Research 77: 213-218; March/April 1984. (elementary)

Silverman, Irwin W.; York, Kenneth; and Zuidema, Nancy. Area-Matching Strategies Used by Young Children. Journal of Experimental Child Psychology 38: 464-474; December 1984. (ages 4-5)

Sindelar, Paul T.; Gartland, Deborah; and Wilson, Richard J. The Effects of Lesson Format on the Acquisition of Mathematical Concepts by Fourth Graders. Journal of Educational Research 78: 40-44; September/October 1984.

The evidence suggests that achievement might have been a function of time spent in sustained instructional activity, either teacher-led instruction or supervised seatwork. (grade 4)

Sindelar, Paul T.; Rosenberg, Michael S.; Wilson, Richard J.; and Bursuck, William D. The Effects of Group Size and Instructional Method on the Acquisition of Mathematical Concepts by Fourth Grade Students. Journal of Educational Research 77: 178-183; January/February 1984.

Achievement and time-on-task varied with group size and instructional method. (grade 4)

Sjoberg, L. Interests, Effort, Achievement and Vocational Preference. British Journal of Educational Psychology 54: 189-205; June 1984.

(secondary)

Slavin, Robert E. and Karweit, Nancy L. Mastery Learning and Student Teams: A Factorial Experiment in Urban General Mathematics Classes. American Educational Research Journal 21: 725-736; Winter 1984.

Support was found for the instructional effectiveness of team work and team rewards, but not for mastery learning components. (grade 9)

Slavin, Robert E.; Leavey, Marshall B.; and Madden, Nancy A. Combining Cooperative Learning and Individualized Instruction: Effects on Student Mathematics Achievement, Attitudes, and Behaviors. Elementary School Journal 84: 409-422; March 1984.

Team-assisted instruction increased achievement more than traditional group-paced instruction. (grades 3-6)

Slavin, Robert E.; Madden, Nancy A.; and Leavey, Marshall. Effects of Cooperative Learning and Individualized Instruction on Mainstreamed Students. Exceptional Children 50: 434-443; February 1984.

Both individualized instruction and team-assisted individualization had significantly positive effects on the social acceptance of academically handicapped students, but no mathematics achievement differences were found. (grades 3-5)

Slavin, Robert E. et al. Effects of Team Assisted Individualization on the Mathematics Achievement of Academically Handicapped and Non-handicapped Students. Journal of Educational Psychology 76: 813-819; October 1984.

Significant positive effects for team-assisted individualization were found for both disabled and non-disabled students. (grades 3-5)

Sleeman, Derek H. Solving Linear Algebraic Equations. Mathematics in School 13: 37-38; September 1984.

A sizeable number of students searched for solutions in all types of tasks, and thus were not using the flow chart method taught. (age 14)

Smith, Steven M. and Rothkopf, Ernst Z. Contextual Enrichment and Distribution of Practice in the Classroom. Cognition and Instruction 1: 341-358; Summer/Fall 1984.

An eight-hour videotaped statistics course was more effective when lessons were presented over four days and, with field-dependent students, when each lesson was in a different room. (college)

Solnick, Jay V. and Baer, Donald M. Using Multiple Exemplars for Teaching Number-Numeral Correspondence: Some Structural Aspects. Analysis and Intervention in Developmental Disabilities 4: 47-63; 1984.

Children were able to solve number-numeral correspondence problems in some formats and not in others. (ages 4-5)

Steele, Kathleen J.; Battista, Michael T.; and Krockover, Gerald H. Using Microcomputer-Assisted Mathematics Instruction to Develop Computer Literacy. School Science and Mathematics **84: 119-124; February 1984.**

The drill-and-practice group showed significantly greater gains in both the affective and cognitive domains of computer literacy. (grade 5)

Stephens, Larry J. The Relationship Between Computer Science Aptitude and Success in Statistical Methods Courses Utilizing Statistical Computer Pac. ages. Journal of Comp ters in Mathematics and Science Teaching 4: 36-37; Fall 1984.

Correlations indicate that undergraduate and graduate students' performance in statistical methods is not strongly influenced by their aptitude in computer science. (college)

Stevenson, Howard C. and Fantuzzo, John W. Application of the "Generalization Map" to a Self-Control Intervention with School-Aged Children. Journal of Applied Behavior Analysis 17: 203-212; Summer 1984. (grade 5)

Stockard, Jean and Wood, J. Walter. The Myth of Female Underachievement: A Reexamination of Sex Differences in Academic Underachievement. American Educational Research Journal 21: 825-838; Winter 1984. (grades 7-12)

Streefland, Leen. Search for the Roots of Ratio: Some Thoughts on the Long Term Learning Process (Towards . . . A Theory). Part I: Reflections on a Teaching Experiment. Educational Studies in Mathematics 15: 327-348; November 1984.

Views of children and of members of an international panel on teaching ratio are presented, and five questions in their responses are compared with real classroom experience. (grade 3)

Studwell, Patti and Moxley, Roy. Self-Recording in Kindergarten: A Study in Naturalisti. Evaluation. Psychology in the Schools 21: 450-456; October 1984. (grade K)

Tatsuoka, Kikumi K. Changes in Error Types Over Learning Stages. Journal of Educational Psychology 76: 120-129; February 1984.

Twenty-seven procedural errors in signed-number arithmetic examples were classified. (junior high)

Taylor, Vincent L.; Smith, Dale D.; and Riley, Mary Tom. A Pre-Math Computer Program for Children: Validation of Its Effectiveness. Computers in the Schools 1: 49-59; Fall 1984.

A microcomputer pre-math program used for varying lengths of time produced no clear learning attributable to the use of the program. (ages 4-5)

Thomas, William E. and Grouws, Douglas A. Inducing Cognitive Growth in Concrete-Operational College Students. School Science and Mathematics 84: 233-243; March 1984.

The game of Master Mind provided a means for cognitive growth in concrete operational science students. Problem-related interaction while playing the game is essential. (college)

Thompson, Alba Gonzalez. The Relationship of Teachers' Conceptions of Mathematics and Mathematics Teaching to Instructional Practice. Educational Studies in Mathematics 15: 105-127; May 1984.

Conceptions of mathematics and mathematics instruction held by three teachers played a significant role in shaping their instructional behavior. (junior high teachers)

Threadgill-Sowder, Judith. Computational Estimation Procedures of School Children. Journal of Educational Research 77: 332-336; July/August 1984.

Estimation skills were found to be highly dependent on students' "number sense." (grades 6-9)

Underhill, Robert. External Retention and Transfer Effects of Special Place Value Curriculum Activities. Focus on Learning Problems in Mathematics 6: 108-130; Winter and Spring 1984.

Effects of special instruction in number bases over one and one-half years depended on the child's mode of counting. (grades 1, 2)

Uprichard, A. Edward; Phillips, E. Ray; and Soriano, Albert, Jr. A Conceptual Schema for Solving Mathematics Word Problems with Implications for Instruction. Focus on Learning Problems in Mathematics 6: 79-107; Winter and Spring 1984.

High agreement was found between structured and non-structured diagnostic interviews. (grades 4, 5)

van den Brink, F. J. Numbers in Contextual Frameworks. Educational Studies in Mathematics 15: 239-257; August 1984.

The context of buses used to introduce addition and subtraction influenced the use of numbers and operations; they should be taught separately before comparisons are made. (grade 1)

van den Brink, Jan. Acoustic Counting and Quantity Counting. For the Learning of Mathematics 4: 2-13; June 1984.

Mechanical rhythmic counting without objects develops prior to counting of quantities of objects. (grades K-2)

Veldman, Donald J. and Sanford, Julie P. The Influence of Class Ability Level on Student Achievement and Classroom Behavior. American Educational Research Journal 21: 629-644; Fall 1984.

Both higher and lower ability students achieved better in higher ability classes. Differences in class environment have more impact on the achievement and behavior of lower ability students. (grades 7, 8)

Wainer, Howard. An Exploratory Analysis of Performance on the SAT. Journal of Educational Measurement 21: 81-91; Summer 1984. (grade 12)

Wang, Margaret C. and Birch, Jack W. Effective Special Education in Regular Classes. Exceptional Children 50: 391-398; February 1984. (grades K-3)

Wang, Margaret C. and Birch, Jack W. Comparison of a Full-Time Mainstreaming Program and a Resource Room Approach. Exceptional Children 51: 33-40; September 1984. (grades K-3)

Webb, Noreen M. Sex Differences in Interaction and Achievement in Cooperative Small Groups. Journal of Educational Psychology 76: 33-44; February 1984.

Male-female ratios for small cooperative learning groups in mathematics are proposed. (junior high)

Webb, Noreen M. Stability of Small Group Interaction and Achievement Over Time. Journal of Educational Psychology 76: 211-224; April 1984.

Group stability in two three-week mathematics units was assessed. (junior high)

Westbury, Marilyn. The Link Between Universities and Employment in Alberta. Alberta Journal of Educational Research 30: 38-48; March 1984. (college)

Witthuhn, Jan. Patterns of Student Performance on Mathematics Strands for American Indians and Others. Journal of Experimental Education 53: 58-63; Fall 1984.

Numeration causes special problems for Indian and black students, and geometry is an area of relative strength for these two groups. (grades K, 1, 2, 4)

Wittig, Michele Andrisin and Allen, Mary J. Measurement of Adult Performance on Piaget's Water Horizontality Task. Intelligence 8: 305-313; October-December 1984. (adults)

Wolk, Steve. The Moderating Influence of Student Characteristics on the Stability of Reading and Mathematics Assessment Over a Five-Year Period. Journal of Experimental Education 52: 234-239; Summer 1984. (elementary, secondary)

Wood, Heather A.; Wood, David J.; Kingsmill, Marian C.; French, Jack R. W.; and Howarth, S. Patricia. The Mathematical Achievements of Deaf Children from Different Educational Environments. British Journal of Educational Psychology 54: 254-264; November 1984.

Degree of hearing loss is correlated with mathematics achievement, but accounts for a limited amount of variance. Type of school and sex add only weak predictive power. (ages 15-16)

Yore, Larry D. and Ollila, Lloyd O. Cognitive Growth and Test-Retest Effects of Selected Conservation Abilities, Logical Groupings and Infralogical Groupings. Psychological Reports 55: 527-538; October 1984. (grade 1)

Dissertations

This final section of the listing contains 297 dissertations.

Abbott, Randy Van Dusen. The Learning Disabled Student in Mathematics: Teacher Attitudes. (University of Denver, 1984.) DAI 45A: 1714; December 1984. (DA8418354)

Both mathematics teachers and learning disability teachers had positive attitudes toward mathematics and toward learning disabled students, although they were more positive toward their field of specialization. (in-service teachers)

Abdulhadi, Abdulaziz Saad. Evaluation of the Mathematics Curriculum for the Intermediate Schools in the Eastern Province of Saudi Arabia. (Cornell University, 1984.) DAI 44A: 3585; June 1984. (DA8407393) (intermediate school)

Abram, Sandra L. The Effect of Computer Assisted Instruction on First Grade Phonics and Mathematics Achievement Computation. (Northern Arizona University, 1984.) DAI 45A: 1032; October 1984.

On a criterion-referenced mathematics test, students having CAI scored significantly higher than those having traditional instruction. (grade 1)

Akerstrom, Margaret Schrag. Individual Differences and Group Problem Solving: A Study of the Cognitive Style Reflection-Impulsivity. (Northwestern University, 1984.) DAI 45A: 454; August 1984. (DA8411129)

Individuals demonstrated sufficient variation in reflective and impulsive problem-solving behaviors to warrant serious questions regarding this cognitive style construct. (grade 7)

Akridge, Barney Raymond. Student Achievement Under Quarter and Semester Systems in Georgia School District. (University of Georgia, 1984.) DAI 45A: 1581; December 1984. (DA8421092) (grades K-12)

Al-Dokheal, Ibrahim Ali. The Relationship Between Mathematics Problem Solving Ability and Piagetian el of Cognitive Development in Sixth Grade Male, Saudi Arabi upils. (University of Northern Colorado, 1983.) DAI 44A: ; March 1984. (DA8324319) (grade 6)

Al-Hareky, Saad M. A Study of the Effectiveness of Modern Educational Technology on the Mathematics Performance of Elementary Students in Saudi Arabia. (The Pennsylvania State University, 1983.) DAI 45A: 734-735; September 1984. (DA8409010) (elementary)

Allen, Dennis Linn. Student Placement Procedures in a Course Entitled Pre-Algebra: Predictors of Success. (University of Akron, 1984.) DAI 44A: 3213; May 1984. (DA8404645)

The prediction equation involved past mathematics scores, algebra aptitude test scores, and previous teacher's recommendation. (grade 7)

Allen, Oscar. A Comparative Study of Early and Late School Entry in the Chattanooga Public Schools as It Relates to Student Performance on the 1982 Ninth Grade Proficiency Test. (The University of Tennessee, 1983.) DAI 45A: 76; July 1984. (DA8408654) (grade 9)

Alston, Gene Robert. The Effects of a Six Months School Entrance Age Differential on Reading, Math, and Language Achievement at the First and Third Grade Level. (Saint Louis University, 1983.) DAI 44A: 2338; February 1984. (DA8325321) (grades 1, 3)

Amburgey, Valeria. An Investigation of Verbal Problems Found in American Arithmetic Textbooks Published Between 1870 and 1966. (University of Houston, 1984.) DAI 45A: 1322; November 1984. (DA8418063)

Texts published between 1870 and 1900 emphasized difficult computational skills, while understanding of problem-solving strategies and use of discrimination skills was emphasized in the 1931-1966 texts. (elementary)

Armstrong, Stephen. An Analysis of the Contents of Computer Literacy Courses for Educators. (East Texas State University, 1984.) DAI 45A: 727-728; September 1984. (DA8414780) (secondary in-service)

Artzt, Alice Feldman. The Comparative Effects of the Student-Team Method of Instruction and the Traditional Teacher-Centered Method of Instruction upon Student Achievement, Attitude, and Social Interaction in High School Mathematics Courses. (New York University, 1983.) DAI 44A: 3619; June 1984. (DA8406277)

Students working in teams missed fewer homework assignments, participated more, and received more individualized help from teachers. (grades 9-11)

Austin, Richard Arthur. Teaching Concepts and Properties of Parallelograms by a Computer Assisted Instruction Program and a Traditional Classroom Setting. (The University of Florida, 1983.) DAI 44A: 2075; January 1984. (DA8324939)

Students using the computer program had significantly higher scores than those having classroom instruction. (elementary preservice)

Bailey, Alexander Ernest. The Effects of Computer Managed Instruction on Student Achievement in Mathematics. (Wayne State University, 1983.) DAI 45A: 775; September 1984. (DA8405950)

No significant difference in achievement was found for groups given differing sequences of computer-managed instruction. (grades 4-6)

Banks, Eunice Jean Myatt. The Effects of Attitudes of Teachers Toward the Achievement Level of Educable Mentally Impaired Students in a Local School District. (The University of Michigan, 1983.) DAI 44A: 2933-2934; April 1984. (DA8402239) (secondary)

Barham, Wilton Albert. Some Psychological, Socio-Economic and Demographic Determinants of Academic Achievement Among Students in Jamaican Teachers Colleges. (The University of Michigan, 1984.)

DAI 45A: 455; August 1984. (DA8412095) (college)

Bath, Barbara Blake. The Effect on the Computational Ability of Children with Acute Lymphocytic Leukemia Due to Prophylactic Treatment of the Central Nervous System. (The American University, 1984.) DAI 45A: 1322; November 1984. (DA8417450) (--)

Bayman, Piraye. Effects of Instructional Procedures on Learning a First Programming Language. (University of California, Santa Barbara, 1983.) DAI 45B: 381; July 1984. (DA8410099) (college)

Beal, Susan Ruth Neuwirth. Understanding of the Numeration System and Computational Errors in Subtraction. (The University of Chicago, 1983.) DAI 44A: 2075-2076; January 1984. (--)

Links between computational errors and understanding of the decimal numeration system were found. (grade 3)

Bennett, Alan Martin. Spatial and Conservation Concepts in Educable Mentally Retarded, Normal, and Bright Children. (University of Pittsburgh, 1983.) DAI 44A: 3011; April 1984. (DA8327682) (M.A. 7)

Bennett, Judith Arlene. Assessment of Instructional Sensitivity in Three Standardized Algebra Achievement Tests. (Kansas State University, 1984.) DAI 45A: 1100; October 1984. (DA8415642)

Instructional sensitivity was judged to be a valuable tool in test construction. (grade 9)

Blackburn, Katherine Taggart. A Correlational and Multiple Regression Analysis of Seventh Grade Mathematics Students' Attitudes and Their Teachers' Characteristics. (The University of Tennessee, 1983.) DAI 44A: 3002; April 1984. (DA8402716)

A strong positive correlation was found between student attitudes toward mathematics and student perceptions of teacher quality. (grade 7)

Blackman, Sherry. A Comparison of Women Who Passed at Least One Course in College Calculus with Women in Non-Science and Non-Business Curriculums on Masculinity-Femininity Personality Traits. Attitudes, and Role Behaviors. (New York University, 1983.) DAI 44A: 2076; January 1984. (DA8325199)

The mathematics-oriented women had higher test scores, were younger, and varied on personality traits from women in other curricula. (college)

Blackwell, Donna Lynn. The Quantitative Orientation of Black High School Students. (Washington University, 1983.) DAI 45A: 442; August 1984. (DA8410607)

Parental educational attainment, income, aspirations, and interest in mathematics were positively associated with quantitative orientation. (grade 12)

Blazejewski, Edward Joseph. The Effects of Two Microcomputer

Instructional Programs upon Mathematical Achievement of Intermediate Elementary Students. (Lehigh University, 1984.) DAI 44A: 3619; June 1984. (DA8405642)

Students who used drill and practice programs or tutorial programs displayed similar achievement. (grades 4-6)

Bloland, Ruth Nolte. A Comparison of the Relative Effectiveness of a Measure of Piagetian Cognitive Development and a Set of Conventional Prognostic Measures in the Prediction of the Future Success of Ninth- and Tenth-Grade Students in Algebra. (University of Southern California, 1984.) DAI 45A: 788; September 1984. (--)

Age, algebra prognosis test score, and mathematics subscores from a standardized achievement test were the most promising predictors of success in algebra. (grades 9, 10)

Blumhagen, Barbara Perkins. The Effects of Cognitive Strategies on Verbal Mathematical Problem Scores of Native Americans. (Northern Arizona University, 1984.) DAI 45A: 487; August 1984. (DA8411452)

The treatment resulted in significant gains on the immediate posttest but not on the retention test. (secondary)

Blum-Zorman, Rachel. Cognitive Controls, Cognitive Styles and Mathematical Potential Among Gifted Preadolescents. (Columbia University, 1983.) DAI 44A: 3656; June 1984. (DA84C6469)

Highly math-precocious students were characterized by two cognitive styles: (literal, systematic) microscopic or telescopic orientation. (ages 8-12)

Bonham, Harriett Joanne. A Comparison of Mathematics Achievement Scores on the Florida State Student Assessment Test Among Selected Groups of Students at Key West High School. (The University of Alabama, 1983.) DAI 44A: 2433; February 1984. (DA8327091)

A statistically significant difference in mathematics achievement level existed when groups were selected by some factors, such as race, family income, and educational level of parents. (grade 11)

Bonner, James Joseph. An Evaluation of the Prescription Learning Approach to Chapter 1 Elementary Mathematics Remediation. (University of Pennsylvania, 1984.) DAI 45A: 1672; December 1984. (DA8420431)

Scores for computation favored pupils who had a Prescription Learning approach in grades 2 and 3, while no significant differences were found in other grades. (grades 2-6)

Bosch, Marie. The Influence of In-Service Education of Teachers in Junior Primary Standards in Schools for Coloured Children on Pupil Achievement and Concept Formation in Mathematics [Afrikaans Text]. (University of South Africa (South Africa), 1982.) DAI 44A: 2445-2446; February 1984. (--) (elementary in-service)

Bott, Deborah Ann. Math Performance Across Six Modality Combinations:

A Study of Children with Learning Problems. (The University of Florida, 1983.) DAI 45A: 1091; October 1984. (DA8415092)

Direct instruction increased pupils' rate of performance, although individual differences were found across performance modes. (elementary)

Bouknight, Martha Lineberger. The Effects of Instructional Method on Types of Learning Outcomes as Evidenced by Differential Performance. (North Carolina State University at Raleigh, 1983.) DAI 44A: 3002; April 1984. (DA8402087)

Different types of learning outcomes were found, with the type of instruction influencing the outcomes achieved. (college freshmen)

Bracy-Nipper, Deborra Linn. Predicting WRAT Performance in a High School Learning Disabled Population, from the WISC-R and DCAT. (Southern Illinois University at Carbondale, 1983.) DAI 44A: 2089; January 1984. (DA8326511) (secondary)

Bratina, Tuiren A. Developing and Measuring an Understanding of the Concept of the Limit of a Sequence. (The Florida State University, 1983.) DAI 44A: 3619-3620; June 1984. (DA8402510)

The developed test had a reliability of .82. Subskills related to understanding limits were identified. (college?)

Braude Kremberg, Dinah Joan. The Performance of Learning Disabled Children on Piagetian Tasks. (New York University, 1983.) DAI 44A: 2089; January 1984. (DA8325220) (ages 8-12)

Breen, Michael John. Cognitive Patterns of Learning Disabled Students as Measured by the Woodcock-Johnson Psycho-Educational Battery. (University of Denver, 1984.) DAI 45A: 1687-1688; December 1984. (DA8418353) (grades 2-5)

Brie, Raymond J. Spatial Imagery Processing: Learning Numeration Concepts in Mathematics Utilizing Place Value Models. (Arizona State University, 1983.) DAI 44A: 3277; May 1984. (DA8405146)

How two pupils used spatial imagery processing in learning numeration concepts with manipulative and pictorial models was explored. (grade 1)

Brown, Karen Silver. Subtraction Without Borrowing: An Alternate Method of Teaching Compound Subtraction Based on the Foundation of Adding and Carrying. (University of Pennsylvania, 1983.) DAI 45A: 356; August 1984. (DA8405851)

Some positive achievement effects were found for students using the additive method rather than decomposition. (grade 2)

Brown, Verla L. An Analysis of an Individual Study Instructional Approach of Teaching Mathematical Concepts to High School Vocational Office Education Students. (North Texas State University, 1983.) DAI 44A: 2333-2334; February 1984. (DA8327012) (secondary)

Buescher, Georganne Kretschman. Identification of That Science and Mathematics Content Needed by Medical Technologists as Perceived by Baccalaureate Program Directors, Directors of Clinical Laboratories, and Medical Technologists. (Temple University, 1984.) DAI 45A: 66; July 1984. (DA8410125) (adults)

Bumgarner, Kenneth Merle. Effects of Informational Feedback and Social Reinforcement on Elementary Students' Achievement During CAI Drill and Practice on Multiplication Facts. (Seattle University, 1984.) DAI 45A: 1102; October 1984. (DA8415896)

Both knowledge of results with a corrective procedure and no feedback produced significantly higher achievement than knowledge of results alone. (grade 3)

Burke, Arthur Joseph. Students' Potential for Learning Contrasted Under Tutorial and Group Approaches to Instruction. (The University of Chicago, 1983.) DAI 44A: 2025; January 1984. (—)

Students taught by tutors or mastery learning achieved much higher than students having conventional instruction. (grades 4, 5)

Busby, Howard Ray. Correlation of Achievement of Deaf Adolescents with the Engagement Style Measure. (The University of Arizona, 1983.) DAI 44A: 2356; February 1984. (DA8322637) (adolescents)

Butler, Gregg A. The Relationship Between School Organizational Patterns and Student Success. (University of Minnesota, 1984.) DAI 45A: 1583-1584; December 1984. (DA8413757)

Scores in computation showed significant differences favoring students in schools with grades 6-8 over K-6 and K-8 patterns. (grade 6)

Cain, Eugene Lawrence. Curriculum Development Strategies Employed to Improve a Small Urban School District's Middle School Mathematics Program, 1977-1982. (Wayne State University, 1983.) DAI 44A: 3586; June 1984. (DA8405955)

Student achievement improved after teachers were retrained, planning procedures improved, learning outcomes defined, and teaching to outcomes and systematic monitoring implemented. (teachers in grades 6-8)

Calamari, Mary Diane Bodin. A Comparison of Two Methods of Teaching Computer Programming to Secondary Mathematics Students. (The Louisiana State University and Agricultural and Mechanical Col., 1983.) DAI 45A: 67; July 1984. (DA8409574)

Students having instruction in BASIC alone had significantly higher achievement than those taught Logo and BASIC. (grades 10, 11)

Canny, Marie Claire. The Relationship of Manipulative Materials to Achievement in Three Areas of Fourth-Grade Mathematics: Computation, Concept Development and Problem-Solving. (Virginia Polytechnic Institute and State University, 1983.) DAI 45A: 775-776; September 1984. (DA8412914)

No significant difference between groups was found on concepts or computation tests, but the group using manipulative materials for introducing content scored significantly higher on the problem-solving test and on the researcher's test. The group using manipulatives for reinforcement also scored significantly higher on the latter test. (grade 4)

Cebulski, Larry Anthony. Identification and Remediation of Children's Errors in Subtraction. (The University of Western Ontario (Canada), 1984.) DAI 45A: 1338-1339; November 1984. (--)

The main source of difficulty involved borrowing procedures. Neither instructions to borrow nor promised rewards for accuracy improved achievement, but specific skill training was more successful. (grades 3, 4)

Chew, Harvey Lincoln. Lecture/Laboratory Instruction in Remedial College Mathematics. (University of Missouri-Saint Louis, 1984.) DAI 45A: 776; September 1984. (DA8412625)

No significant differences in achievement or other variables were found between groups given the lecture approach or the Personalized System of Instruction. (college)

Christy, Marsha Demeranville. Estimates of Academic Level of Functioning of Students by Teachers of the Educable Mentally Retarded. (Virginia Polytechnic Institute and State University, 1984.) DAI 45A: 1363; November 1984. (DA8417816) (ages 6-13, teachers)

Cleon, Joshua D. The Effects of an Experimental Curriculum Development Project in Statistics on the Achievement and Attitude of Tenth Grade Students in Liberia. (University of Illinois at Urbana-Champaign, 1983.) DAI 45A: 106; July 1984. (DA8409897) (grade 10)

Clithero, Dale L. A Comparison and Evaluation of Two Instructional Programs for the Teaching of Probability and Statistics to Eighth Grade Students. (University of Missouri-Columbia, 1983.) DAI 44A: 3620; June 1984. (DA8406177)

The analytical method was judged to be more efficient than the activities method, but significant learning took place in both. (grade 8)

Cobb, Paul Anthony. Children's Strategies for Finding Sums and Differences. (University of Georgia, 1983.) DAI 44A: 2396; February 1984. (DA8326394)

Three of six pupils constructed thinking strategies; the other three relied on number word and numeral patterns correlated with counting types. (grades 1-2)

Colson, David Pelton. The Influence of Various Home Bilingual Environments on the Academic Achievement, Language Development, and Psychosocial Adjustment of Fifth and Sixth Grade Hispanic Students. (University of San Francisco, 1983.) DAI 45A: 778; September 1984. (DA8413065) (grades 5, 6)

Cook, Deborah H. The Development and the Evaluation of a Diagnostic Mathematics Pretest for Chemistry and of a Program to Strengthen Mathematics Proficiencies for Chemistry Students. (Temple University, 1984.) DAI 45A: 1707-1708; December 1984. (DA8419806)

The developed test was both reliable and valid. The developed program had no effect on chemistry achievement, although mathematics achievement significantly improved for females. (secondary)

Cooke, Nancy Louise. Effects of Reinforcement for Correct Rate Versus Percent Correct on EMR Students' Acquisition, Generalization, and Maintenance of Multiplication Facts. (The Ohio State University, 1983.) DAI 44A: 2732; March 1984. (DA8400185)

Eight of ten students improved on their rate of giving multiplication facts. (grade 5, EMRs)

Cooper, Colin. Discriminant Factors in the Choice of a Traditional "People-Oriented" Versus a Non-Traditional "Math and Science-Oriented" Career Field in Black Students. (University of Maryland, 1983.) DAI 45B: 1611; November 1984. (DA8419478)

Participation and encouragement were two of the seven factors identified for non-traditional aspirants. (college)

Corbo, Nicholas J. Mathematics Attitude and Achievement in Grades Five Through Seven in a Southcentral Pennsylvania School District. (University of Pennsylvania, 1984.) DAI 45A: 1672-1673; December 1984. (DA8420432)

Gender was not a significant factor in the development of attitude toward mathematics, and attitude was only slightly related to achievement. (grades 5-7)

Corkery, Steven Eugene. The Relationship of Self-Concept to Sociometric Status, Anxiety, and Academic Achievement Among Middle School Students. (University of Georgia, 1983.) DAI 44A: 3324; May 1984. (DA8405037) (grades 4-7)

Craig, Joanne Louise. The Influence of Relaxation and Cognitive Training on the Behavior, Academic Performance, Perseverance, and Problem-Solving of Hyperactive Children. (University of Washington, 1984.) DAI 45A: 1340; November 1984. (DA8419127) (ages 7-12)

Craine, Timothy Vail. The Development of Symbolic Representation of the Relations 'Greater Than' and 'Less Than' Among Elementary School Children. (Wayne State University, 1984.) DAI 45A: 776; September 1984. (DA8414487)

The symbol tasks were more difficult than verbal tasks for pupils in grades 4 and 6, but less difficult in grade 2. (grades 2, 4, 6)

Cuevas, Spence Joseph The Effect of an Inservice Program on Elementary Students' Mathematics Achievement. (Northwestern State University of Louisiana, 1983.) DAI 44A: 2118; January 1984. (DA8326700)

No significant difference was found in the mathematics achievement

of students whose teachers were or were not given an in-service program. (elementary in-service)

Cunningham, James Alan. A Comparison of Math Achievement Between Mathematically-Able and Regular Math Students Following Self-Instruction Training. (Oklahoma State University, 1983.) DAI 45A: 1688; December 1984. (DA8414144)

Self-instruction training did not differentially affect mathematics achievement or reflectivity. (grade 9)

Davidson, Philip Minor. The Development of Numerical Reasoning in Children: The Role of Classes, Relations, and Functions. (University of California, Berkeley, 1983.) DAI 45B: 1036; September 1984. (DA8413356)

It was concluded that functional cognition may be a source of notions such as the constant and iteration; logical cognition may serve to organize these notions into a consistent structure. (ages 5-7)

Davis, Anselm George, Jr. The Relationship of Student Attitudes Toward School to Academic Achievement and School Attendance of American Indian Students in Public High Schools with Entitlement Grants from Part A of the Indian Education Act of 1972. (The Pennsylvania State University, 1983.) DAI 44A: 2937; April 1984. (DA8327478) (grades 10-12)

Davis, Genevieve Ann LaRusso. Hemispheric Laterality, Sex, Visuospatial and Verbal Processing Proficiency as Predictors of Mathematical Ability in Young Children. (The University of Connecticut, 1984.) DAI 45A: 106; July 1984. (DA8408545)

Neither lateral organization for visuospatial nor verbal functioning was significantly greater in mathematically capable children than mathematically disabled children, but proficiency in each was significantly better in the capable pupils. (grade 3)

Delcamp, Natalie Lowey. Relationships Among Conservation Abilities, Auditory and Visual Perception Skills, and School Achievement of First Grade Students. (The University of Florida, 1983.) DAI 45A: 1283; November 1984. (DA8415108) (grade 1)

DeLoach, Ruby Haydock. An Investigation of the Relationship of Learning Modalities to Mathematical Achievement in Sixth Grade Students. (University of South Carolina, 1983.) DAI 45A: 67-68; July 1984. (DA8409301)

Learning modalities were not found to be related to mathematics achievement. (grade 6)

DeRusha, Henry W., Jr. The Effects of Testwiseness Instruction on the Standardized Test Scores of Fifth Grade Students. (Boston College, 1984.) DAI 45A: 1100; October 1984. (DA8415601) (grade 5)

Dhompongsa, Gullaya Taboonpong. The Teaching and Learning of Mathematics in Eighth Grade Classes in Thailand. (University of

Illinois at Urbana-Champaign, 1984.) DAI 45A: 106-107; July 1984. (DA8409765) (grade 8)

Dick, Thomas Patrick. Covariance Structural Models for Mathematics Achievement and Participation: An Investigation of Sex Differences at the Level of College Calculus Using Factorial Modeling. (University of New Hampshire, 1984.) DAI 45A: 1673; December 1984. (DA8419550)

Academic experience and preparation were the two most important factors in explaining variance in calculus achievement for both males and females, while affective and cognitive factors contributed very little to the variance. (college)

Donoso de Zuanic, Adriana Raquel. A Study of the Development of the Concept of Measurement in Children and Adolescents. (The University of Iowa, 1983.) DAI 44A: 3634; June 1984. (DA8407735) (junior and senior high)

Doyen, Michael Oakes. The Effect of Special Education Resource Room Programs on Student Academic Achievement, Locus of Control, and Self-Concept. (Southern Illinois University at Edwardsville, 1984.) DAI 45A: 1092-1093; October 1984. (DA8416191) (elementary)

Druva, Cynthia Ann. A Comparison of the Comprehension Skills Used in Problem Solving by Math-Anxious and Non-Math-Anxious Students Enrolled in College-Level Mathematics Courses. (University of Minnesota, 1984.) DAI 45A: 1341; November 1984. (DA8418468)

The high-math-anxious students did better on non-computational, visual-type problems than did non-math-anxious students. A similar instructional sequence for both groups was indicated. (college)

Dvarskas, Donna Perrotti. The Effects of Introductory Computer Programming Lessons on the Learners' Ability to Analyze Mathematical Word Problems. (The University of Connecticut, 1983.) DAI 44A: 2665; March 1984. (DA8400949)

Instruction in computer programming in either BASIC or Logo appeared to have a significant effect on the ability of students at the concrete level of development to analyze problems. (middle school)

Edwards, Jane Anne. Eyeblink Rate as a Measure of Cognitive Processing Effort. (University of California, Berkeley, 1983.) DAI 45B: 1046; September 1984. (DA8413370) (?)

Eichholz, Jerry R. A Process for the Acquisition of Basic Arithmetic Facts. (Saint Louis University, 1984.) DAI 45A: 1673; December 1984. (DA8418633)

A process for the acquisition of basic facts was developed. (elementary)

Elmoghirah, Abdullah Othman. A Survey of the Availability and Use of Instructional Aids in Mathematics in the Public Elementary Schools in the District of Riyadh in Saudi Arabia. (University of

Missouri-Columbia, 1983.) DAI 44A: 3620; June 1984. (DA8406184) (elementary)

Endsley, Glenn James. The Relationships to Cognitive Preference, Sex, and Attitude on Achievement Scores in a First Year Algebra Course. (University of Colorado at Boulder, 1983.) DAI 45A: 107; July 1984. (DA8408029)

Females achieved higher than males. Higher attitude scores were associated with higher achievement, but cognitive style was not significantly related to achievement. (grade 9)

Englebert, Betty Booth. A Study of the Effectiveness of Microcomputer-Assisted Math Instruction on the Achievement of Selected Secondary Specific Learning Disabled Students. (University of Southern Mississippi, 1983.) DAI 45A: 737; September 1984. (DA8414911)

Students receiving computer-assisted instruction had significant gains in achievement compared to students having only traditional instruction. (grade 9)

Esposito, Paul Dante. The Effects of Strategy Games on Measures of Problem Solving, Mathematics Anxiety, and Logical Reasoning on Select Undergraduate Elementary Education Majors. (Temple University, 1984.) DAI 45A: 79; July 1984. (DA8410139)

A significant gain in scores was found favoring the game-playing group. (college)

Evans, Diane Wilkinson. Understanding Zero and Infinity in the Early School Years. (University of Pennsylvania, 1983.) DAI 44B: 2265; January 1984. (DA8326285)

By first grade, children were "virtually perfect at solving zero problems," yet often said zero was not a number. Many first and second graders and most third graders recognized the infinite nature of the number system. (grades K, 1-3)

Faitos, Rosemary. Time Allocation Practices Between and Within More Effective and Less Effective Third Grade Classrooms. (University of San Francisco, 1983.) DAI 44A: 2938; April 1984. (DA8328526)

Students in more effective classrooms received an average of over 56 more minutes of instruction each day. A positive relationship was found between language and mathematics scores, and allocated time. (elementary)

Falakdine, Darush. Mathematical Problem-Solving Skills of High School Vocational Agriculture Students. (The Ohio State University, 1984.) DAI 45A: 1613; December 1984. (DA8418939)

Reactions of experts, teachers, and students to problem-solving instruction in vocational agriculture classes were obtained. Students need more help, especially with multi-step problems. (secondary)

Fandreyer, Ernest Egon. Concept Formation in Mathematics Using Definitions. (Boston University, 1984.) DAI 45A: 1061-1062; October

1984. (DA8416851)

The group receiving deductive instruction on proportion and similarity scored relatively high; the inductive group scored relatively low. (grade 7)

Fernsler, Thomas J. The Evaluation of Two Types of Instructional Strategies on Preservice Elementary Teachers' Attitudes Toward Elementary School Calculator Use. (The Pennsylvania State University, 1983.) DAI 44A: 2396; February 1984. (DA8327488)

Required use of calculators by preservice teachers elicited significantly more positive attitudes toward calculator usage than when no classroom use was provided. (elementary preservice)

Ferrucci, Beverly Joan. The Relationship of Precision Teaching to the Speed, Computational Skill Development, and Concept Development of Working with Rational Numbers. (Boston University, 1984.) DAI 45A: 1673; December 1984. (DA8416835)

Groups given precision teaching scored significantly higher than control groups. (grade 5)

Fitzgerald, Eugenia Elaine. A Personalized Approach to Mathematics Anxiety Reduction Among College Students. (Arizona State University, 1984.) DAI 45A: 1062; October 1984. (DA8415458)

Relaxation therapy was effective in enabling higher achievement scores in one class but not in another. (college)

Gage, Michele Satty. A Comparison of Forming and Solving Original Mathematics Word Problems with Solving Ready Made Problems by Community College Students. (New York University, 1982.) DAI 44A: 2076; January 1984. (DA8325210)

Students used a wider range of processes and strategies during problem-forming situations than with ready-made problems. (community college)

Gallimore, Debra Nan. A Comparison of Sustained Effects in Fourth Graders. (Memphis State University, 1983.) DAI 44A: 2352; February 1984. (DA8327450) (grade 4)

Gallitano, Gail Marie. The Effects of a Computer Based Approach to Teaching Trigonometry on Student Achievement and Attitudes. (Columbia University Teachers College, 1983.) DAI 44A: 3311; May 1984. (DA8403256)

Attitudes of females improved significantly when computers were used in instruction. No significant achievement difference was found between groups using or not using computers. (secondary)

Gatipon, Betty Becker. Effects of Teachers' Use of Mastery Learning Techniques on the Minimum Competency Test Performance of Rural Second-Grade Students. (The Louisiana State University and Agricultural and Mechanical Col., 1983.) DAI 45A: 69; July 1984. (DA8409581) (grade 2)

George, Richard Anthony. The Influence of Pictures, Type of Problem and Sex on the Solution of One- and Two-Step Mathematics Story Problems Containing Extraneous Information by Fourth, Fifth and Sixth Graders. (Boston University, 1984.) DAI 45A: 1062; October 1984. (DA8416841)

Few significant differences were found. Girls were superior on some problems only in grade 6. Diagram training increased success. (grades 4-6)

Giambrone, Thomas Michael. A Philosophical Study of the Epistemological Nature of the Attainment of Understanding Mathematics. (State University of New York at Buffalo, 1983.) DAI 44A: 2700; March 1984. (DA8329796)

An examination of some aspects of the school setting and curriculum that limit one's ability to understand mathematics is included. (--)

Gilbert-Macmillan, Kathleen M. Mathematical Problem Solving in Cooperative Small Groups and Whole Class Instruction. (Stanford University, 1983.) DAI 44A: 2700; March 1984. (DA8329718)

No significant performance differences were found between students solving problems in four-person groups or as a whole class. (grade 5)

Gleason, Bonnie Jean. Reading and Mathematics Performance of Three Subgroups of Elementary Teacher Education Students at Kansas State University. (Kansas State University, 1983.) DAI 44A: 2352; February 1984. (DA8328114) (elementary preservice)

Goldberger, Virginia Elizabeth. An Examination of Sex Differences in Quantitative Problem-Solving Strategies in Young Children. (University of Massachusetts, 1984.) DAI 45B: 374; July 1984. (DA8410290)

Sex differences in counting or measurement use were found in the untrained group but not in the trained group. (ages 5-10)

Goldstein, Zachary David. An Analysis of the Structure of Attitude Toward Mathematics Among Junior High School Students. (Fordham University, 1984.) DAI 45A: 107; July 1984. (DA8409258)

Three components of attitude were confirmed, but dimensions differed for males and females. (grade 8)

Gonzalez, Angela. Effectiveness of Problem-Solving Activities in Changing Preservice Elementary School Teachers' Attitudes Toward Mathematical Problem Solving. (The Pennsylvania State University, 1983.) DAI 45A: 107-108; July 1984. (DA8409041)

Attitudes toward problem solving were neutral, but changed significantly in a positive direction following problem-solving activities. (elementary preservice)

Goodin, Dyke. The Feasibility of Continuing Modern Mathematics in the Elementary School Curriculum. (George Peabody College for Teachers

of Vanderbilt University, 1983.) DAI 45A: 703; September 1984. (DA8412728)

A significant but negative relationship was found between assessment scores and a "modern mathematics" curriculum. (grade 4)

Gordon, John Thomas, Jr. The Effect of Teaching College Developmental Studies Algebra Students to Draw Diagrams When Solving Mathematics Problems. (Georgia State University-College of Education, 1983.) DAI 44A: 2396; February 1984. (DA8325757)

No significant difference in achievement was found between groups receiving or not receiving instruction in drawing diagrams. (college)

Grady, Donna Katherine. The Academic Performance of General Educational Development Entrants Compared with High School Diploma Entrants to Broward Community College, 1980-1983. (Florida Atlantic University, 1983.) DAI 44A: 3258; May 1984. (DA8403842) (college)

Grier, Terry Brooks. A Study of the Relationship Between Student Achievement and Evaluations of Teacher Performance. (George Peabody College for Teachers of Vanderbilt University, 1983.) DAI 44A: 2939; April 1984. (DA8402955) (teachers in grades 2-6)

Griffin, Charlene Buckner. An Analysis of Learning Styles, Achievement, and Higher Cognitive Processes in Three Programs for Gifted Urban Elementary School Students. (Temple University, 1984.) DAI 45A: 1637; December 1984. (DA8419816) (grades 4-6)

Griffin, Roquette Batalo. The Effects of a Fundamental Magnet School Program on the Academic Achievement of Third and Fifth Grade Children. (University of Georgia, 1984.) DAI 45A: 1637-1638; December 1984. (DA8421114) (grades 3, 5)

Grossman, Elaine Sue. A Comparison of Instructional Methods Employing Group and Individual Programming in an Introductory Computer Science Course. (Columbia University Teachers College, 1983.) DAI 44A: 2397; February 1984. (DA8322206) (college)

Guth, James Harry. The Relationship Between Selected Schooling Inputs and Processes and Gains in Elementary School Pupil Achievement in Reading, Language Arts, and Mathematics. (North Carolina State University at Raleigh, 1983.) DAI 45A: 33; July 1984. (DA8409611) (grades 3-6)

Halasz, Frank G. Mental Models and Problem Solving in Using a Calculator. (Stanford University, 1984.) DAI 45B: 1046-1047; September 1984. (DA8412847)

Students taught a model and procedures for using the calculator's stack mechanism out-performed no-model students on unfamiliar/complex problems. A taxonomy of six modes of processing was also developed. (?)

Hall, Robert Tremaine, Jr. A Case Study of the Teaching of Fractions.

(University of Georgia, 1983.) DAI 44A: 3311; May 1984. (DA8405047)

Children who could not partition a unit or make part-whole comparisons before instruction could not do so after 30 days of instruction on fractions. (grade 6)

Hamman, Velda Taber. The Effects of Management Practices of Principals on Implementation of an Elementary Mathematics Program. (Ball State University, 1983.) DAI 44A: 2639; March 1984. (DA8401290)

No significant differences in management practices were found. (elementary in-service)

Haraden-Auger, Carol Ruth. A Path Analysis of the Effect of Females' Attitudes Toward Mathematics on Career Choice. (University of Wyoming, 1983.) DAI 44A: 2416; February 1984. (DA8327761)

Thirteen paths were significant for females and five for males. Two factors were significantly related to career choice for females and none for males. (college)

Hare, James Donald. Impact of Minimum Competency Testing on the Mathematics Curriculum in North Carolina. (George Peabody College for Teachers of Vanderbilt University, 1984.) DAI 45A: 776-777; September 1984. (DA8412730)

Mathematics supervisors' views on objectives, courses, achievement, and materials were surveyed. (secondary)

Harmon, B. J. Henry. A Correlational Study of the Correspondence Between Achievement in Calculus and Complementary Cognitive Style. (Wayne State University, 1984.) DAI 45A: 738; September 1984. (DA8414502)

Each of nine cognitive styles was weakly related to calculus achievement. (community college)

Hartman, James P. The Relationship Between Teacher Strikes and Student Achievement in the State of Michigan. (The Pennsylvania State University, 1984.) DAI 45A: 1589-1590; December 1984. (DA8419604) (grades 4, 7)

Hawley, Steven Carl. The Effect of Time Using Computer-Assisted Instruction in a Remedial Mathematics Program upon Achievement and Attitudes of Students in Grades 6, 7, 8. (University of Cincinnati, 1984.) DAI 45A: 1628; December 1984. (DA8420881)

Achievement was significantly related to time on the computer. Gains were not retained, however. (grades 6-8)

Hayes, Ralph W. The Relationship of Student Attitude to Academic Achievement in Reading/Language, Mathematics, Science, and Social Studies When Gender, Grade Level and Class Size Are Controlled. (Ball State University, 1984.) DAI 45A: 125; July 1984. (DA8410453) (grades 4-6)

Heikkila, Frank Lawrence. An Evaluation Model for Middle School

Programs for High Ability Mathematics Students. (State University of New York at Buffalo, 1983.) DAI 44A: 2700; March 1984. (DA8329797)

The model includes four categories of concerns: appropriateness, reasonableness, relatedness, and model keystones. (middle school)

Hoffman, Edward Charles. The Effects of Teacher Strikes on Student Achievement in the State of New York. (The Pennsylvania State University, 1983.) DAI 44A: 2308; February 1984. (DA8327502) (--)

Holloway, G. Yvonne. Skill Qualification Test (SQT) Performance of Army Personnel as Related to Basic Academic Skills and Preparational Review Procedures. (Texas A&M University, 1983.) DAI 44A: 2652; March 1984. (DA8329927) (adults)

Horner, Charlotte M. The Effects of Logo on Problem Solving, Locus of Control, Attitudes Toward Mathematics, and Angle Recognition in Learning Disabled Children. (Texas Tech University, 1984.) DAI 45A: 1716; December 1984. (DA8419865)

No significant differences were found between students given or not given instruction with Logo. (junior high)

Houck, Morris Temple. The Effects of Sex, Race, and Test Anxiety on Standardized Test Performance of Middle School Pupils. (Texas Southern University, 1983.) DAI 45A: 70; July 1984. (DA8407301) (middle school)

Hughes, David Keith. The Effects of the Sixty-Twenty Year-Round Schedule on the Academic Achievement of Elementary Students. (Northern Arizona University, 1984.) DAI 45A: 991; October 1984. (DA8416166) (elementary)

Humphrey, John E. A Comparison of How Paced and Unpaced Problems Affect Learning During CAI Math Drills. (West Virginia University, 1983.) DAI 45A: 108; July 1984. (DA8407841)

Paced drills produced higher correct response rates and better learning pictures than unpaced or matched-pace drills. (elementary)

Ivascyn, Daniel Walter. An Investigation of a Homework Assistance Program and the Factors Influencing Middle and Junior High Students Seeking Help with Homework. (University of Massachusetts, 1984.) DAI 45A: 70; July 1984. (DA8410297) (grades 6-8)

Jackson, Yvette Rene. Mexican Americans and Achievement . . An Investigation of the Relationship Between Achievement Test Performance and Selected Variables. (The University of Michigan, 1984.) DAI 45A: 463; August 1984. (DA8412166) (grade 4)

Jimenez, Maria Angeles. A Study of the Effects of Certain Variables upon 4th and 6th Grade Costa Rican Children's Ability to Solve Arithmetic Word Problems. (The Ohio State University, 1983.) DAI 44A: 3278; May 1984. (DA8403536) (grades 4, 6)

Jolly, Sarah Jean. Customizing a Norm-Referenced Achievement Test to

Obtain Curriculum Relevance for Program Evaluation: A Validation Study. (University of South Florida, 1983.) DAI 44A: 3362-3363; May 1984. (DA8329174) (?)

Jones, Mary Harley. Sex Differences in Achievement on Cognitive Dimensions of Computer Literacy and in Attitudes Toward Computing and Computers. (University of Virginia, 1983.) DAI 44A: 3620; June 1984. (DA8402875)

No main effect for sex was found on the cognitive scale. Significant sex differences were found for two of six attitudinal variables. (grade 9)

Kanarian, Mary A. Factors Predicting Pattern of Math Courses and Mathematical Aptitude Test Scores Among High School Women and Men. (University of Rhode Island, 1983.) DAI 44B: 3241; April 1984. (DA8401409)

No differences were found between participant and non-participant groups, and few differences were found between backgrounds of men and women. (grade 12)

Kaufman, Adrienne. Sex Differences in Mathematics Reasoning in Mathematically Gifted and Average Fifth and Sixth Graders. (Hofstra University, 1983.) DAI 45A: 1094-1095; October 1984. (DA8415187)

Differences in mathematics reasoning (problem-solving scores) were found favoring boys in both the gifted and average groups, but were significant only for the gifted. (grades 5, 6)

Kazimi, Ebrahim. An Empirical Investigation of Gagne's Cumulative Learning Theory vs. Piaget's Developmental Theory Regarding the Conservation of Liquid. (Texas A&M University, 1984.) DAI 45A: 1374; November 1984. (DA8417754) (grades K-4)

Keller, James Edward. The Effects of Table-Building Problem-Solving Procedures on Students' Understanding of Variables in Pre-Algebra. (The Ohio State University, 1984.) DAI 45A: 1673-1674; December 1984. (DA8418957)

No significant differences in achievement were found, although one table-building group seemed to have a better understanding of variables than other groups did. (grade 9)

Kerns, Thomas Elliott. An Analysis of the Attitudes of South Carolina School Board Members and Educators Toward Alternatives for Alleviating the Teacher Shortage in Mathematics and Science. (University of South Carolina, 1983.) DAI 44A: 2640-2641; March 1984. (DA8329660) (secondary)

Khorrami, Kamal. The Relationship of Selected Non-School Variables to the Decline of Scholastic Aptitude Test Scores. (North Texas State University, 1983.) DAI 44A: 3301-3302; May 1984. (DA8404324) (secondary)

Klein, Alice S. The Early Development of Arithmetic Reasoning: Numerative Activities and Logical Operations. (City University of New

York, 1984.) DAI 45B: 375-376; July 1984. (DA8409404)

Children constructed different forms of numerical representation after instruction on counting or one-to-one correspondence. The dimensions of problems influenced their reasoning about these problems. (ages 4-6)

Knight, Douglas James. The Effect of Diagnostic Testing on the Achievement in Mathematics of Junior Grade Students. (University of Toronto (Canada), 1983.) DAI 45A: 499-500; August 1984. (--)

The diagnostic tests were found by teachers to be highly useful. (grades 4-6)

Kotovsky, Kenneth. Tower of Hanoi Problem Isomorphs and Solution Processes. (Carnegie-Mellon University, 1983.) DAI 45B: 1048; September 1984. (DA8414745)

Moves, memory load, and the role of spatial information were among the factors studied. (college?)

Krieger, Suzan Jane McGehee. Assessment of Relationships Among Measures of Undergraduate Elementary Teacher Education Majors' Reading and Mathematics Achievement Test Scores, Collegiate Mathematics Course Grade, First English Composition Course Grade and Overall Grade Point Average. (Kansas State University, 1983.) DAI 44A: 2976-2977; April 1984. (DA8402070) (elementary preservice)

Kroen, William Charles, Jr. A Discriminant Analysis of the Relationship of Student Characteristics to Performance on Minimum Competency Tests in Reading and Mathematics. (Boston College, 1983.) DAI 44A: 3038; April 1984. (DA8404002) (grade 8)

Kunka, Alice Susan Kirkman. A Modality-Instruction Interaction Study of Elementary Learning Disabled Students Using Two Types of Electronic Learning Aids for Math Instruction. (University of Pittsburgh, 1983.) DAI 45A: 387; August 1984. (DA8411731)

No significant interaction was found between modality (auditory, visual, and kinesthetic) and mathematics achievement. (elementary)

Kuzminski, Pamela Plunkett. The Effects of Specialized Skill Instruction on the Ability of Sixth-Grade Students to Solve Mathematical Word Problems. (North Texas State University, 1984.) DAI 45A: 777; September 1984. (DA8414102)

Developed materials were highly beneficial for students with average mathematics ability coupled with average to high reading ability. (grade 6)

Landau, Marsha Schwartz. The Effects of Spatial Ability and Problem Presentation Format on Mathematical Problem Solving Performance of Middle School Students. (Northwestern University, 1984.) DAI 45A: 442-443; August 1984. (DA8411163)

A strong correlation was found between spatial ability and problem-solving performance. Other findings concern format and sex. (middle school)

Lara, Anunciacion Viril. Pupil Ability as a Moderator of Correlations Between Teacher Behavior Patterns and Pupil Gains in Reading and Mathematics. (University of Virginia, 1983.) DAI 44A: 3361; May 1984. (DA8327001) (elementary?)

Lau, Sarah Bennett. The Learning of Indeterminate Arguments by Children in the Context of a Syllogistic Reasoning Task. (Clark University, 1983.) DAI 45B: 1040; September 1984. (DA8408863) (preadolescence)

Levner, Charles. Modification of the Off-Task and Interference Behavior and Task Performance of Children in Special Education Through Film-Mediated Modeling. (City University of New York, 1983.) DAI 44B: 2267; January 1984. (DA8319778) (elementary)

Ley, Thomas Hugh. The Learning Disabled Child: Area of Dysfunction, Time in Special Education, and Dimensions of Self-Concept. (Howard University, 1983.) DAI 44A: 3328; May 1984. (DA8404061) (ages 7-11)

Lindemann, James Frederick. The Relationship Between Home Academic Environment and Student Academic Achievement. (The University of Wisconsin-Madison, 1983.) DAI 44A: 1995; January 1984. (DA8319524) (grades 2-8)

Lindsey, Betty Jean Braun. Validation of the Matthies School-Readiness Examination as a Predictor of Academic Performance in Grade One. (University of Louisville, 1984.) DAI 45A: 1692-1693; December 1984. (DA8420424) (grade 1)

Longshore, David, Jr. The Effects of Unfamiliar Life Situations in Mathematics Word Problems on the Performance of Students. (University of South Carolina, 1983.) DAI 45A: 144; July 1984. (DA8409314)

Students performed better on problems involving familiar situations. (grade 12)

Luckinich, Patricia Ann. An Investigation of the Effects of Instruction in Diagramatic Modeling and Sentence Writing on Children's Ability to Solve Verbal Problems and Number Sentences. (University of Pittsburgh, 1983.) DAI 44A: 2397; February 1984. (DA8327714)

Pupils given instruction in modeling and writing showed significant increases in their ability to draw diagrams, write number sentences, and obtain correct answers for problems. (grade 2)

Macdonald, Charles Jackson, II. A Comparison of Three Methods of Utilizing Homework in a Precalculus College Algebra Course. (The Ohio State University, 1984.) DAI 45A: 1674; December 1984. (DA8418970)

Having a quiz on the previous day's lecture, plus a review question, appeared to aid achievement more than did collecting homework or having a quiz without review. (college)

Majers, Deborah O'Leary. The Effects of Problem Solving Training on

the Mathematical Computation Skills of Fourth Grade Students. (University of Missouri-Columbia, 1983.) DAI 45A: 443; August 1984. (DA8412790)

No significant differences in achievement were found between direct and indirect training, nor did scores improve with training. (grade 4)

Maleki, Pir Mohammad. An Investigation of Factors Affecting Social Science Students' Attitude Toward Mathematics. (Kansas State University, 1983.) DAI 44A: 3002-3003; April 1984. (DA8402072)

Eight attitude factors were identified. Correlations between attitudes and achievement were low. (college)

Manning, Paul Richard. A Descriptive Exposition of the Mathematics Used by Bernard Lonergan in the Development of His Philosophical-Theological System (1957-1972). (New York University, 1983.) DAI 44A: 3715; June 1984. (DA8406303)

Many of Lonergan's examples pertain to secondary school mathematics (secondary)

Mansfield, Helen Margaret. Ideas About Lines. (University of Georgia, 1984.) DAI 45A: 443; August 1984. (DA8411973)

Comparisons of responses from students in grades 7 and 16 are given; they had many different ideas and some misconceptions. (elementary preservice, grade 7)

Marcus, Adrienne M. A Comparative Study of Maternal Alcoholism and Maternal Child-Rearing Attitudes, Child Perception of Maternal Behavior, Child's Academic Achievement and School Attendance. (Fordham University, 1983.) DAI 44B: 2267; January 1984. (DA8326181) (ages 7-12)

Mawer, Robert Frank. Some Relations Between Learning and Problem Solving. (University of New South Wales (Australia), 1983.) DAI 45A: 1727-1728; December 1984. (--)

A history-cued strategy appeared to aid achievement, while means-ends analysis may retard learning. (?)

Maynard, Robert Lee, Jr. A Study of the Effects of Required Mastery Strategies and the Use of Concrete Manipulatives on College-Age Remedial Students. (The University of North Carolina at Greensboro, 1983.) DAI 45A: 108; July 1984. (DA8409000)

Required mastery significantly affected gains on achievement and enjoyment posttests; use of manipulatives produced gains on the unit tests. (community college)

McComb, James Andrew. Mathematics Placement Procedures and Psychometric Decision Theory. (Michigan State University, 1983.) DAI 44A: 2742; March 1984. (DA8400599)

No aptitude-treatment interactions were found for either algebra or calculus sequences. (college freshmen)

McCoy, Karen Burns. Career Anchors of Technical Personnel. (The University of Utah, 1984.) DAI 45A: 1728; December 1984. (DA8420740)

Differences between current and former mathematics teachers and non-teaching mathematics majors were ascertained. (in-service teachers, adults)

McDonald, Anita Dolores Leonard. The Effect of Supplemental Microcomputer Instruction on the Achievement of University Level Developmental Mathematics Students Using the Keller Plan. (Saint Louis University, 1983.) DAI 45A: 1674; December 1984. (DA8418669)

No significant differences in achievement were found between groups using microcomputers or the Keller plan. (college)

McKenzie, Danny Lee. Effects of Laboratory Activities and Simulations on the Engagement and Acquisition of Graphing Skills by Eighth Grade Students with Varying Levels of Spatial Scanning Ability and Cognitive Development. (University of Georgia, 1983.) DAI 44A: 2430; February 1984. (DA8326414)

Instructional strategies involving hands-on activities resulted in higher achievement than the written simulation strategy. (grade 8)

McKenzie, Lois Jean. The Relationship of Self-Concept and Academic Achievement of Students After Leaving Private/Christian Schools and Entering Public Schools. (Northern Arizona University, 1984.) DAI 45A: 1025; October 1984. (DA8416171) (grades 4-6)

Meehan, Anita Marie. Proportional Reasoning as a Function of Sex, Spatial Ability, Task Spatial Content, and Task Format. (Temple University, 1984.) DAI 45B: 377-378; July 1984. (DA8410211)

No significant sex differences in proportional reasoning were found. Spatial ability was related to task performance. (grade 12)

Melkus, Lovie Ann Jeffrey. Errors in Looping and Assignment by Novice Assembly Language Programmers. (North Texas State University, 1983.) DAI 44A: 3311; May 1984. (DA8404331) (college)

Miller, Kathleen Noble. The Effect of the Individualized Manpower Training System Instruction Program in Basic Math Skills on the Achievement Level and Dropout and Failure Rate of Mathematics of Business Students at Daytona Beach Community College. (Florida Atlantic University, 1983.) DAI 44A: 3254; May 1984. (DA8403843) (community college)

Miller, Mark Allen. Computer-Oriented Application Modules for Abstract Algebra. (Illinois State University, 1983.) DAI 45A: 108; July 1984. (DA8409449)

Both graduate and undergraduate students were in general favorably impressed by the modules. (college)

Miller, Steven Franklin. Personality Traits and the Preference to do Nonroutine Mathematics Problems. (The University of Florida, 1983.) DAI 44A: 2076-2077; January 1984. (DA8324990)

Personality style was not a discriminating factor as students sorted problems. Problems that contained either a logic content or structure were most preferred, while least preferred were problems with geometry content and inductive structure. (secondary)

Miller, Suzanne Winifred Hilton. A Comparison of Computer Assisted Instruction with Prescription Learning and the Traditional "Pull-Out" Program Used in Supplementing Instruction of Mathematics Basic Skills to Chapter I (Title I) Students. (Oregon State University, 1984.) DAI 44A: 2397; February 1984. (DA8326453)

Achievement of students receiving CAI supplemental instruction was significantly higher than achievement with prescription learning or "pull-out" instruction, although retention was not significantly different. (elementary and middle school)

Milojkovic, James Dusko. Children Learning Computer Programming: Cognitive and Motivational Consequences. (Stanford University, 1984.) DAI 45B: 385; July 1984. (DA8408330)

Overall, the pattern of results did not support claims of immediate cognitive benefits of learning computer programming, although some limited evidence favored work with Logo over BASIC. (grade 5)

Min, Ok-Kyung Lee. A Possible Relationship Between Ideograph Knowledge and Specific Cognitive Abilities in Children and Young Adults. (University of Washington, 1984.) DAI 45B: 1602; November 1984. (DA8419174) (elementary, college)

Mitchell, David Charles. The Interactive Effects of Student Ability, Learning Style, and Sequencing of Calculus Instruction on Student Achievement and Preference. (University of Washington, 1984.) DAI 45A: 1322-1323; November 1984. (DA8419175)

Only high ability students performed better under the sequence which presented the concrete before the abstract. (college)

Mitchell, Milton. The Effects of Learning the Logo Computer Language on the Mathematical Achievement and Attitudes of Preservice Elementary Teachers. (The University of Wisconsin-Madison, 1983.) DAI 45A: 777; September 1984. (DA8316223)

The students learned concepts of algebra while programming in Logo, and had a positive change in confidence in learning mathematics. (elementary preservice)

Miura, Irene Takei. Processes Contributing to Individual Differences in Computer Literacy. (Stanford University, 1984.) DAI 45B: 1934-1935; December 1984. (DA8420593) (middle school)

Monaco, Nanci Marie. Cognitive Developmental Level, Gender, and the Development of Learned Helplessness on Mathematics Tasks. (State University of New York at Buffalo, 1984.) DAI 45A: 1346-1347; November 1984. (DA8410575)

Formal operational students, those having strategy training, those not given non-contingent failure, and males each performed better on some tasks. (grades 9-12)

Montague, Marjorie. The Effect of Cognitive Strategy Training on Verbal Math Problem Solving Performance of Learning Disabled Adolescents. (The University of Arizona, 1984.) DAI 45A: 1096; October 1984. (DA8415053)

An eight-step strategy appeared effective in improving performance on two-step problems. (adolescents)

Moore, Catherine Jean Smith. A Report of Teacher/Student Perceptions of Minimum Competency Instruction in Alabama Schools. (Auburn University, 1984.) DAI 45A: 500; August 1984. (DA8410869) (grades 7-10)

Moore, Melissa Colby. Using Contingent Access to Arcade-Like Computer Games to Improve Student Performance on Computer-Presented Math Problems. (University of Kansas, 1983.) DAI 44A: 3279; May 1984. (DA8403665)

For only a few of 16 pupils, the games were not reinforcers or motivating. (grade 3)

Mowery, Sally Anne. The Development and Application of a Taxonomy for Mathematics Instruction. (Emory University, 1984.) DAI 45A: 1674; December 1984. (DA8420292)

Significant differences in four textbooks were found in frequency of instructional moves. Emphasis was on experiencing, recognizing/replicating written language and symbols, and manipulating language and symbols. (grade 1)

Mrosla, Helen Pauline. Differences Between Field-Dependent/Field-Independent Cognitive Styles of Low and High Achieving Mathematics Students. (North Texas State University, 1983.) DAI 44A: 2397-2398; February 1984. (DA8327051)

Low-achieving students were more field-dependent than high-achieving students. Females were more field-dependent than males. (secondary)

Mulder, Ivy Susanna. Work Forms in Preparatory Mathematics Teaching. (University of Pretoria (South Africa), 1983.) DAI 45A: 1323; November 1984. (--) (elementary)

Mullen, Frank Maurice. The Relationship Between Learner Control, Field Orientation, and Achievement in Computer Assisted Instruction on Measurement for Industrial Arts Students. (East Texas State University, 1983.) DAI 44A: 3307; May 1984. (DA8403326) (college)

Munyofu, Paul Malima. The Effects on Achievement, Retention and Attitude of Using Expository and Discovery Approaches in Teaching Factoring to Adult Slow Learners. (University of Pittsburgh, 1984.) DAI 45A: 1675; December 1984. (DA8421356)

Students taught by the discovery method had significantly higher scores than those taught by the expository method. Attitudes in both groups were generally negative. (community college)

Mussnug, Kenneth Joseph. A Comparison of Student Achievement in Competency Based Vocational Education and Traditionally Instructed Vocational Drafting Programs. (University of Kentucky, 1983.) DAI 45A: 1105; October 1984. (DA8416144) (postsecondary?)

Muzik, Steven Thomas. A Single-Subject Experimental Study of Time on Task for Selected Classroom Aptitude, Treatment, and Achievement Interaction Variables. (Washington State University, 1983.) DAI 44A: 3271; May 1984. (DA8404603)

High-ability students (n=2) were generally superior in time on task, but low-ability students (n=2) were more on task for 9 or 10 minutes of allocated time, and had a threshold of 13 to 15 minutes before effective learning occurred on seatwork. (secondary)

Myers, James Richard. Change of Attitude Toward Mathematics of Prospective Elementary Teachers in a Mathematics Methods Course. (West Virginia University, 1983.) DAI 44A: 2077; January 1984. (DA8326637)

Attitudes toward mathematics of students in the mathematics methods course improved more than the attitudes of those in other methods courses. (elementary preservice)

Nabors, Pearlie Profit. The Attitude of Louisiana Elementary School Teachers Toward Promotion and Nonpromotion as a Factor in Raising the Reading and Mathematical Achievement Level of Elementary School Pupils. (Northeast Louisiana University, 1983.) DAI 44A: 2037-2038; January 1984. (DA8322577) (elementary teachers)

Nager, Nancy Joan. Cognitive-Perceptual Development in Conservation. (Yeshiva University, 1983.) DAI 44B: 2268; January 1984. (DA8323171) (elementary)

Narayanian, Kamala. Sources and Order of Difficulty in Arithmetic Word Problem Solving in Educable Mentally Retarded and Nonretarded Individuals. (Columbia University Teachers College, 1983.) DAI 45A: 661; August 1984. (DA8403276)

Inappropriately cued problems with subtraction were the most difficult type for both groups. (grade 4, ages 14-18)

Nelson, Bonnie Conrad. The Effects of Symbolic Content of Test Items on Perceived Difficulty, Anxiety and Achievement in Computer Administered Quizzes. (University of Maryland, 1983.) DAI 45A: 500; August 1984. (DA8412035) (graduate school)

Nelson, Gail Ann. A Comparison of the Speed and Accuracy Performance of Learning Disabled and Average Achieving Second-Grade Boys on Microcomputer Games Involving Basic Addition and Subtraction Facts. (University of Kansas, 1983.) DAI 44A: 3354; May 1984. (DA8403617)

No significant differences were found between learning disabled and average pupils on the subtraction game. All subjects remained at starting level in addition. (grade 2)

Neppl, Roger E. Teacher Supply and Demand for Public School K-12 Programs, Colorado: 1980 and Beyond. (University of Colorado at Boulder, 1983.) DAI 45A: 23-24; July 1984. (DA8408058) (teachers)

Nicholson, James W., Jr. The Preparedness of Small High Schools in Mississippi for Meeting the 1986 Requirements in Mathematics and Science for Entrance into State Supported Institutions of Higher Learning. (The University of Mississippi, 1983.) DAI 44A: 3232; May 1984. (DA8404277) (secondary)

Nicholsonne, Mary Richardson. A Comparison of Student Achievement and Student Attitude Among Desegregated, Integrated, and One-Race Urban Elementary Schools. (Temple University, 1984.) DAI 45A: 1579; December 1984. (DA8419845) (grade 5)

Noonan, John Vincent. Feedback Procedures in Computer-Assisted Instruction: Knowle -of-Results, Knowledge-of-Correct-Response, Process Explanations, and Second Attempts After Errors. (University of Illinois at Urbana-Champaign, 1984.) DAI 45A: 131; July 1984. (DA8409820)

Knowledge of correct response (KCR) was better than knowledge of results, but knowledge of results with process explanation was as effective as KCR in correcting errors. (grades 9, 10)

O'Brien, Susan. The Impact of School Resources on Elementary Students' Achievement in Reading and Mathematics in a Selected Wisconsin School District. (Loyola University of Chicago, 1984.) DAI 45A: 1005; October 1984. (DA8416950) (grades 3, 5)

O'Dell, Carol S. The Effects of High School Calculus on Achievement in the First Calculus Course at the College Level. (West Virginia University, 1983.) DAI 45A: 443; August 1984. (DA8407848)

No significant differences in achievement were found between those who studied calculus for two semesters in high school and those with no high school calculus. Significant differences were found for those with one semester of calculus or none. (college freshmen)

Oguntebi, Zacchaeus Kunle. Probability: Sex and Grade Level Differences and the Effect of Instruction on the Performance and Attitudes of Middle School Boys and Girls. (Michigan State University, 1983.) DAI 44A: 2700; March 1984. (DA8400609)

No sex differences were found in probability knowledge gains after three weeks of instruction. (grades 6-8)

Oishi, Sabine Streiff. Effects of Team-Assisted Individualization in Mathematics on Cross-Race and Cross-Sex Interactions of Elementary School Children. (University of Maryland, 1983.) DAI 44A: 3622; June 1984. (DA8405690)

The program appeared to be effective in improving inter-group ratings. (upper elementary)

Orehovec, John Peter. Implications of the Development of Mathematical

Problem Solving, 1894-1983. (Michigan State University, 1984.) DAI 45A: 1062; October 1984. (DA8415246)

Concerns and models for problem-solving have been similar for decades. (--)

Overdorf, C. Scott. Teacher Perceptions of the Current and Future Status of the Use of Microcomputers for Instructional Purposes in the Public Secondary Schools. (Temple University, 1984.) DAI 45A: 1631; December 1984. (DA8419830) (secondary)

Owings, Maria Facchina. Environmental Influences on the Development of Vocabulary and Mathematics Abilities During Early Adulthood. (Purdue University, 1983.) DAI 44A: 3640; June 1984. (DA8407591) (adults)

Pace-Chappell, Edwina Ankton. A Multivariate Analysis of the Effects of a Parent Education Model Follow Through Program Versus Enrollment in a Title I School on Reading and Mathematics Competence, Grade Retention, and Special Education Placement of Black and Hispanic Students: A Longitudinal Study. (Southern Illinois University at Carbondale, 1984.) DAI 45A: 792-793; September 1984. (DA8414027) (grades 3-8)

Paler, Peggy Louise D'Arcy. The Influence of Gender, Age, Schooling, and Geographical Locale on the Performance of Selected Conservation Tasks by Philippine Children. (University of Southern California, 1983.) DAI 44A: 2675; March 1984. (--) (ages 6, 8, 10, 12)

Palmer, Patricia Ann. A Study of Seventh- and Eighth-Grade Course Offerings and Contemporary Practices in Selected Junior High and Middle Schools in Iowa, Kansas, Missouri, and Nebraska. (University of Kansas, 1983.) DAI 44A: 3272; May 1984. (DA8403598) (grades 7, 8)

Patterson, Dena Louise. Calculus Students' Utilization of Graphs as Visual Representations. (University of California, Berkeley, 1983.) DAI 44A: 3311-3312; May 1984. (DA8329007)

Most students drew graphs when appropriate, but still did not solve problems correctly. (college)

Paulson, Daniel Robert. The Effects of Subtraction Algorithms and Short Term Memory on Computational Accuracy on Fifth Grade Students. (The University of Florida, 1983.) DAI 45A: 1323; November 1984. (DA8415148)

Alternative algorithms did not appear to be as effective as a very sequential review of the traditional (decomposition) algorithm. (grade 5)

Payne, Harry Edward, Jr. The Effects of Three Instructional Techniques on the Problem-Solving Ability of General Education Mathematics Students at the Junior College Level. (University of South Florida, 1983.) DAI 44A: 2670; March 1984. (DA8329179)

The three techniques were equally effective in improving

problem-solving ability and retention. (junior college)

Pierce, Randall D. A Quasi-Experimental Study of Saxon's Incremental Development Model and Its Effects on Student Achievement in First-Year Algebra. (The University of Tulsa, 1984.) DAI 45A: 443-444; August 1984. (DA8412582)

Significant differences in achievement between the Saxon-taught group and another were found on one of eleven measurements. (grade 9)

Ponte, Joao Pedro Mendes da. Functional Reasoning and the Interpretation of Cartesian Graphs. (University of Georgia, 1984.) DAI 45A: 1675; December 1984. (DA8421144)

Results suggest that interpretation of complex graphs should be part of the secondary school mathematics curriculum. (grade 11, preservice teachers)

Porter, Christine Carol. The Effect of Learned Helplessness and Performance on Cognitive Tasks in Children. (Wayne State University, 1983.) DAI 45A: 468; August 1984. (DA8406009) (grades 4, 5)

Prendergast, Jean M. A Comparison of an a Priori Mathematics Hierarchy with Hierarchies Generated from Equivalent Tests. (Boston University, 1984.) DAI 45A: 444; August 1984. (DA8411047)

Hierarchies generated from nine tests differed significantly. (college freshmen)

Probert, Barbara Stevenson. Math Confidence Workshops: A Multimodel Group Intervention Strategy in Mathematics Anxiety/Avoidance. (The University of Florida, 1983.) DAI 44B: 2231; January 1984. (DA8324998)

The workshops resulted in improvement in confidence and some anxiety factors. (college)

Quinto, Alicia Leosala. Assessing Metacognitive Skills in Problem Solving. (The Pennsylvania State University, 1983.) DAI 45A: 132; July 1984. (DA8409086) (college)

Radlinski, Sara Hunting. A Follow-Up Study of a Preschool Intervention Program. (The University of Connecticut, 1984.) DAI 45A: 1096-1097; October 1984. (DA8416105) (elementary)

Rasch, Katharine Doyle. The Evolution of Selected "Modern" Mathematics Content in Elementary School Mathematics Textbooks 1963-1982. (Saint Louis University, 1983.) DAI 44A: 2031; January 1984. (DA8325416)

Geometry and equations still receive extensive treatment; in current text series, at least 6,000 exercises are devoted to modern mathematics. (grades 1-6)

Rayborn, Robert Ray. Curricular Relevance of Standardized Mathematics Test Items and the Relationship to Selected Test Item Statistics. (Washington State University, 1983.) DAI 44A: 2122; January

1984. (DA8325491)

Less experienced teachers viewed items as being more relevant than more experienced teachers did. Relevant items were significantly less difficult for students. (teachers in grade 5)

Rayer, Maurice C. The Development and Content Validation of Two Parallel Competency-Based Test Forms to Assess the Metric Competency of Adults. (The University of Nebraska-Lincoln, 1983.) DAI 44A: 2451; February 1984. (DA8328190)

The reliabilities of the tests were .87 and .89. (adults)

Reif, Richard Joseph. The Development of Formal Reasoning Patterns Among University Science and Mathematics Students. (The University of New Mexico, 1983.) DAI 45A: 766; September 1984. (DA8410690) (college freshmen)

Reusing, Olivia Spencer. Family-Related Factors as Predictors of Mathematics Achievement and Course-Taking by Girls with Early Mathematics Performance. (University of Maryland, 1983.) DAI 45A: 1296; November 1984. (DA8419540)

Parents' education, maternal employment, birth order, and membership in an all-girl family accounted for nine per cent of achievement variance and seven per cent of course-taking variance. (grade 9)

Rezba, Carol Lynn. The Sequencing Ability of Mathematically Normal and Disabled Learners as a Function of Verbal Rehearsal and Input-Output Modality and Their Interactions. (Boston University, 1984.) DAI 45A: 777-778; September 1984. (DA8414716)

Mathematically disabled students exhibited a developmental lag in use of the verbal rehearsal strategies, and were weakest in the modalities most frequently used in mathematics instruction. (grades 3-6)

Rhodes, Thomas Michael. A Study to Assess and Compare the Effects on Achievement and Attitude of Two Remediation Efforts in Mathematics by the Ohio State University. (The Ohio State University, 1983.) DAI 44A: 3312; May 1984. (DA8403564)

The remedial course improved the placement level of 76 per cent of students who entered at the lowest level. (grade 12)

Rice, George Earl. An Investigation of Selected Variables for the Prediction of Computer Programming Performance of Secondary School Students. (The University of Mississippi, 1984.) DAI 45A: 1006; October 1984. (DA8415716) (ages 15-18)

Ricketts, Dorothy Lee. Task Analysis and Error Analysis in Mathematics Instruction. (Saint Louis University, 1983.) DAI 44A: 2117; January 1984. (DA8325417)

Task analysis procedures were effective for pupils at both high and low levels of achievement. (teachers in grades 3, 5)

Riley, Nancy J. Attainment of Piagetian Cognitive Tasks as Related to Reading and Mathematics Achievement Among Fourth- and Fifth-Grade Learning Disabled and Non-Learning Disabled Pupils. (University of Missouri-Columbia, 1983.) DAI 44A: 3034; April 1984. (DA8401156) (grades 4, 5)

Ring, Rochelle H. An Introduction to the Theory of Fuzzy Sets: The Mathematical and Philosophical Background. (New York University, 1984.) DAI 45A: 444; August 1984. (DA8412349)

The material is suitable for students who have completed an elementary survey course in the foundations of mathematics. (college)

Roberts, Geraldine Dukes. A Comparative Study of the Effects of Two Instructional Strategies on Improving Conceptual and Creative Problem-Solving Abilities in Algebra. (The University of Mississippi, 1984.) DAI 45A: 1062-1063; October 1984. (DA8415717)

No significant differences in achievement were found between groups given lecture or problem-solving methods. (college)

Rose, Henry Luther, III. Teacher Grades as a Measure of the Effectiveness of Title I Services with Regard to Student Achievement. (Temple University, 1984.) DAI 45A: 81; July 1984. (DA8410158) (grade 6)

Rose, Norman Stephen. The Effects of Learning Computer Programming on the General Problem-Solving Abilities of Fifth Grade Students. (North Texas State University, 1983.) DAI 44A: 2354; February 1984. (DA8327059) (grade 5)

Rothman, Jeffrey. The Understanding of Conservation of Substance and Order of Movement in Youngsters with Cerebral Palsy. (Rutgers University The State U. of New Jersey (New Brunswick), 1983.) DAI 44B: 2269; January 1984. (DA8325911) (ages 4-11)

Rubenzer, Ronald Lester. The Effects of Biofeedback-Induced Relaxation on Test/Math Anxiety and Related Test Performance for Children in a Special Elementary School for the Gifted. (Columbia University Teachers College, 1984.) DAI 45B: 1042; September 1984. (DA8411288)

Experimentally reducing anxiety level improved cognitive performance. (grades 5, 6)

Rundell, Judith Lipscomb. A Comparison of the Effectiveness of Two Instructional Intervention Models Used with Mathematically High-Risk First Grade Students. (Northwestern State University of Louisiana, 1984.) DAI 44A: 3312; May 1984. (DA8404344)

Neither of the two intervention models significantly affected pupil readiness for learning early mathematical concepts. (grade 1)

Ryan, Terry Kim. The Effect of an Agriculture Program on the Academic Achievement of Eighth Grade Students. (Northern Arizona University, 1983.) DAI 45A: 56; July 1984. (DA8409367) (grade 8)

Sairafi, Adnan Abdulghani. An Investigation of Procedures for Improving Prospective Elementary School Teachers' Problem-Solving Abilities. (The Florida State University, 1983.) DAI 44A: 3312-3313; May 1984. (DA8404757)

Preservice teachers learned to use tables and models to solve nonroutine problems. (elementary preservice)

Salehi, Saeed. A Longitudinal Study of Differential Achievement in Mathematics and Its Significance for Accessibility to Higher Education. (University of Kentucky, 1982.) DAI 44A: 2690; March 1984. (DA8401373)

Mathematics achievement is a highly significant factor in determining who goes to college and who does not. The period immediately preceding grade 6 seems to be very crucial in overall mathematics educational development. (grades 1-12)

Saltoun, Myra Debborah. Math and Reading Test Anxiety Among Three Populations: Mexicans, Hispanic Immigrants, and Anglo-Saxon Children. (University of Southern California, 1984.) DAI 45A: 741; September 1984. (--) (grades 2, 5)

Scheu, Loretta Anita. Interaction Effects of Seven Structure-of-Intellect Factors with Two Modes of Presentation of Concepts of Common Fractions to High School Remedial Mathematics Students. (New York University, 1983.) DAI 44A: 3621; June 1984. (DA8406315)

Only one significant interaction was found for students given verbal-deductive or figural-inductive treatments. (secondary)

Schneider, Diane. The Influence of Parental Beliefs, Encouragement and Expectations on Their Children's Mathematical Needs, Values and Plans. (Fordham University, 1984.) DAI 45A: 133-134; July 1984. (DA8409269)

Differences and similarities in perceptions of mothers, fathers, sons, and daughters were found. (grade 11)

Schonemann, Roberta Dianne Federbush. The Interaction of Visual and Verbal Lesson Components with Concept Level and Academic Level of Learner. (Purdue University, 1983.) DAI 44A: 2701; March 1984. (DA8400419)

High school students seemed to be visual cue oriented and college students were verbal definition oriented when learning pseudo-geometric concepts. (secondary, college)

Schulte, Larry L. The Effects of Visual Art Experiences on Spelling, Reading, Mathematical, and Visual Motor Skills at the Primary Level. (University of Kansas, 1983.) DAI 45A: 386; August 1984. (DA8403620) (grades K-2)

Seglin, Mark Howard. The Prediction of College Level Introductory Mathematics Grades Among Nontraditional College Students: A Latent Construct, Structural Model Approach. (New School for Social Research, 1982.) DAI 45B: 406; July 1984. (DA8409491)

The model accounted for over 55 per cent of the variance in students' grades, and about 75 per cent of the variance of latent constructs in tests. (college freshmen)

Sensor, Marian Carol. Students Tutoring Students: A Junior High Peer Tutoring Project. (The University of Iowa, 1983.) DAI 44A: 2098; January 1984. (DA8325181)

High and medium ability tutors appeared to benefit from tutor training. (grade 7)

Shepley, Richard Allen. Predicting Success in College Mathematics from High School Mathematics Preparation. (Utah State University, 1983.) DAI 44A: 3273; May 1984. (DA8403218)

Students who had courses in the higher levels of mathematics in high school were significantly more successful in college mathematics. Level was more significant than grades. (college freshmen)

Shibata, Setsue. A Comparison of Math Performance Between Those Students Who Are Initially Ready for Entering the First Grade and Those Who Are Not: A Longitudinal Study from Grade One Through Grade Three. (University of South Carolina, 1984.) DAI 45A: 1323-1324; November 1984. (DA8419078)

Differences in mathematics performance between ready and non-ready pupils remained the same except for black students, for whom the difference increased. (grades 1-3)

Shinatrakool, Somchai. Relationships Between Verbal and Situational Problem Solving. (University of Missouri-Columbia, 1983.) DAI 45A: 404; August 1984. (DA8412808)

Real-life situational problem-solving performance was slightly better than achievement on a written problem-solving test. (grade 8)

Shinsky, Edmund John. The Appropriateness of the Criteria for Inclusion of Special Education Students in the Michigan Educational Assessment Program at the Fourth-Grade Level. (Michigan State University, 1983.) DAI 45A: 814; September 1984. (DA8407238) (grade 4)

Shu, Jane Shi-Chen. Acquisition of Arithmetic Understanding and Skill in Relation to Method of Instruction. (Indiana University, 1983.) DAI 44A: 3642; June 1984. (DA8406845)

Pupils who received schema-based instruction on addition with fractions performed significantly better than pupils who received text-based instruction. (grade 6)

Silcock, Cindi Levy. A Comparison of High School Females' Attitudes Toward Mathematics in Coeducational and All-Girls Private Schools. (Temple University, 1983.) DAI 45A: 470; August 1984. (DA8410223)

Coeducational and sex-segregated girls did not significantly differ on any attitude subscales. (secondary)

Sileo, Joseph Rocco. The Relationship of Family Management Style, Locus of Control, Sex, and Self Concept to Academic Achievement in Elementary School Black Children. (Howard University, 1983.) DAI 44A: 3643; June 1984. (DA8405615) (grade 5)

Simmons, Sylvia Nietz. Teacher Efficacy, Teacher Expectation, and Performance Pressure as Moderators of the Test Anxiety-Test Performance Relationship. (The University of Florida, 1983.) DAI 45A: 1101; October 1984. (DA8415163) (grade 5)

Smuckler, Nancy Sidon. Chapter 220: A Study of the Academic Achievement of Minority Interdistrict Transfer Pupils. (The University of Wisconsin-Milwaukee, 1984.) DAI 45A: 1349; November 1984. (DA8418245) (grades 2, 5)

Sohaili, Mahshid Rayati. Interactive Effects of Internality/Externality and Open/Traditional Classrooms on Educational Achievement.. (University of Southern California, 1984.) DAI 45A: 59; July 1984. (--) (grades 5, 6)

Spatt, Ingrid Andree. Modifications of the Regents Competency Examination Testing Procedures as They Affect Students with Learning Disabilities: A Descriptive Study. (State University of New York at Albany, 1984.) DAI 45A: 717; September 1984. (DA8414626) (secondary)

Srivastava, Dinesh Mohan. The Savings Transfer Effect of Teaching Mathematical Modeling on Learning a Physics Unit Using a Mastery Learning Approach. (The University of Wisconsin-Madison, 1983.) DAI 44A: 3313; May 1984. (DA8323076)

Instruction in mathematical modeling resulted in improved learning of a physics unit; a mastery learning strategy added to its effectiveness. (college)

Staley, John Morris. The Success of Special Admissions Students Offered Basic Skills Instruction in a Four Year University Curriculum. (State University of New York at Buffalo, 1984.) DAI 45A: 1662; December 1984. (DA8420695) (college)

Stanic, George Milan Alexander. Why Teach Mathematics? A Historical Study of the Justification Question. (The University of Wisconsin-Madison, 1983.) DAI 44A: 2347; February 1984. (DA8319540)

The development of rationales for teaching mathematics was traced from 1890 to 1940. Present-day positions were then discussed. (--)

Stanley, Otis. A Survey and Evaluation of Teacher Perceptions of the Effectiveness of Mathematics Curriculum Materials and Practices in Contributing to the Improvement of Student Achievement. (Wayne State University, 1984.) DAI 45A: 742; September 1984. (DA8414532)

Mathematics materials and practices played a significant role in improving achievement. (in-service teachers)

Steinberg, Ruth. A Teaching Experiment of the Learning of Addition

and Subtraction Facts. (The University of Wisconsin-Madison, 1983.) DAI 44A: 3313; May 1984. (DA8325546)

The use of derived facts strategies more than doubled during instruction, accounting for half of the answers to addition problems. (grade 2)

Stoughton, Christine Kreder. The Relationship Between Children's Academic Achievement and Their Perception of Parental Behaviors and Susceptibility to Parental Influence. (Boston College, 1984.) DAI 45B: 1305-1306; October 1984. (DA8415618) (grade 4)

Stronge, James Harold. The Impact of the Attitudes of High School Principals on Minimum Competency Testing. (The University of Alabama, 1983.) DAI 44A: 2648; March 1984. (DA8327147) (principals, grade 9)

Stubbs, Carole Ann. An Investigation of the Effect of Structure of Intellect Training on Academic Achievement with Low Achieving Primary Students. (The University of Tennessee, 1983.) DAI 45A: 136; July 1984. (DA8402754) (grades 1, 2)

Sun, Feng-Jyi Diana. Factor Analysis of the Mathematical Variables Affecting the Performance of High Incidence Handicapped Students in Verbal Problem Solving. (Southern Illinois University at Carbondale, 1983.) DAI 44A: 2077; January 1984. (DA8326569)

The construct validity of a matrix model was partially confirmed. rror patterns were highly associated with the problem-type dimension in the model. (elementary?)

Suryanto, (no first name). College Students' Understanding of Selected Rules of Inference. (University of Georgia, 1983.) DAI 44A: 3313; May 1984. (DA8405090)

Students' recognition of the validity of an inference was significantly affected by the checkability, but not by presence of a proof. (college)

Taylor, John Robert. Conditional and Biconditional Reasoning: A Developmental Study Using New Norms. (The University of British Columbia (Canada), 1982.) DAI 45A: 1324; November 1984. (--)

Test results indicated many different interpretations of the same proposition, and clear differences among the four propositions. (grades 6, 8, 10, 12)

Tepper, Marcy Elizabeth. Prediction of Academic Success or Failure of Algebra I Students. (The University of Arizona, 1983.) DAI 44A: 3345; May 1984. (DA8403244)

Achievement motivation, luck, and previous mathematics achievement were significant predictors, but neither sex nor ethnic group was. (grade 9)

Test, David Wesley. Teaching Coin Summation to Mentally Retarded Individuals. (The Ohio State University, 1983.) DAI 44A: 2738; March 1984. (DA8400303) (adults)

Thiel, Linda Louise Searle. The Relationship Between Reading Ability and Arithmetic Ability of Young Hearing-Impaired Children. (New York University, 1983.) DAI 45A: 1368; November 1984. (DA8412359) (ages 6-12)

Thieme-Busch, Carolyn Ann. Teacher Training on Effective Use of Time: Impacts on Teacher Behavior and Student Reading and Math Achievement. (Temple University, 1984.) DAI 45A: 154-155; July 1984. (DA8410228)

No significant differences due to training were found. (junior high teachers)

Thomas, David Allen. The Effect of Formative Testing, Prescribed Remediation, and Retesting on Student Performance in Calculus. (Montana State University, 1983.) DAI 44A: 2398; February 1984. (DA8326962)

The experimental group scored significantly higher than the group not given quizzes and remediation. (college freshmen)

Townsend, Mark Allan. An Introduction to the Acceleration of Scalar Sequences. (Oklahoma State University, 1983.) DAI 44A: 2077; January 1984. (DA8325854)

The study was intended to help bridge the gap between advanced literature on acceleration methods and undergraduate texts. (college)

Traub, Gilbert. The Development of the Mathematical Analysis of Curve Length from Archimedes to Lebesgue. (New York University, 1984.) DAI 45A: 445; August 1984. (DA8412360)

How the topic of curve length can be used as a recurring, unifying theme in postsecondary mathematics education is included. (college)

Treadway, Ray Theodore. An Investigation of the Real-Problem-Solving Curriculum in the College General Education Mathematics Course. (The University of North Carolina at Greensboro, 1983.) DAI 45A: 108-109; July 1984. (DA8409004)

The problem-solving group showed greater improvement in attitudes toward mathematics, mathematical skills, and problem-solving abilities than the traditional group. (college)

Trenholme, Barbara Ann. The Effect of Varying Syntactic Complexity on the Mathematical Problem-Solving Ability of Learning Disabled Students. (The University of Texas at Austin, 1983.) DAI 45A: 814-815; September 1984. (DA8414458)

Syntactic complexity significantly affected learning disabled students' problem-solving performance. (grades 6-9)

Troxel, Richard Dale. Models of Cognition in the Mathematical Preparation of Special Educators. (Columbia University Teachers College, 1983.) DAI 44A: 3621; June 1984. (DA8403290)

Teachers evaluated text materials based on a strategy-generation process for exceptional children. (in-service teachers)

Tyderle, Janis Forbes. The Effect of Hands-On Experiences with Common Fraction Manipulatives on the Mathematical Achievement, Attitude Toward Mathematics, and Use of Manipulatives of Prospective Elementary Teachers. (Memphis State University, 1983.) DAI 44A: 2398; February 1984. (DA8327465)

Three weeks of experience with manipulatives increased students' inclination to use them in lesson plans and to demonstrate concepts. (elementary preservice)

Vandivier, Phillip L. Interrelationship Among Intelligence, Adaptive Behavior, and Academic Achievement of Elementary Students Referred for Individual Evaluation. (Ball State University, 1983.) DAI 44A: 3022; April 1984. (DA8402423) (ages 6-11)

Van Overmeer, Albert William. Differences Between Teachers' and Students' Perceptions of Learning Expectations and Their Effects upon Achievement in Algebra. (Drake University, 1983.) DAI 44A: 3274; May 1984. (DA8404020)

Significant differences were found in teachers' and students' perceptions of classroom activities. (grade 9)

Vaughn, Rosco C. The Relationship of School Enrollment Size and Student Achievement in Reading, Language and Mathematics in New Mexico Schools. (New Mexico State University, 1984.) DAI 45A: 719; September 1984. (DA8414597) (grades 5, 8, 11)

Vecchiotti, Dorothea Irene. Gifted Children: Piagetian Tasks and Identification. (Saint Louis University, 1984.) DAI 45B: 1937; December 1984. (DA8418707) (grades 2-5)

Vejdani-Jahromi, Mansoor. An Assessment of the Usefulness of the Peabody Mathematics Readiness Test for First-Grade Iranian Students. (George Peabody College for Teachers of Vanderbilt University, 1983.) DAI 44A: 3003; April 1984. (DA8402971) (grade 1)

Wachs, Brian Jay. The Mathematics Anxieties and Attitudes of Urban Public School Teachers. (Yeshiva University, 1983.) DAI 44A: 3240-3241; May 1984. (DA8404993)

A significant negative relationship was found between teachers' attitude and anxiety scores. (elementary in-service)

Wakefield, Alice Parsons. Attractibility During Transitional Stages of Concept Acquisition. (University of Virginia, 1983.) DAI 44A: 3276; May 1984. (DA8328739) (elementary)

Walker, Shirley Jean. Discrimination Learning: A Function of Conservation Training and Conservation Ability. (East Texas State University, 1983.) DAI 44B: 3558; May 1984. (DA8403334) (ages 4-6)

Weiner, Neil Charles. Cognitive Aptitudes, Personality Variables, and Gender Difference Effects on Mathematical Achievement for Mathematically Gifted Students. (Arizona State University, 1983.) DAI 44A: 3621; June 1984. (DA8405165)

Gifted boys and girls were significantly different, with boys having higher mathematical reasoning ability. Verbal ability was the best predictor of mathematical achievement for girls. (secondary?)

Wheeler, Patricia Holmes. School Achievement and Allocated Time for Learning in Grade Six. (University of California, Berkeley, 1983.) DAI 45A: 1580; December 1984. (DA8413632) (grade 6)

Whitfield, David. Attitudes and Literacy of College Instructors and High School Seniors Regarding the Use of Microcomputers in Education. (University of San Francisco, 1983.) DAI 45A: 49; July 1984. (DA8408648) (grade 12, college teachers)

Wilde, Jeffrey McCrea. Setting Up Algebra Word Problems: A Task Analytic Approach to Problem Difficulty. (Claremont Graduate School, 1984.) DAI 44B: 2544-2545; February 1984. (DA8328282)

Novice algebra students experienced much greater difficulty with template features of problems than did experienced students; novices rarely attended to category structure. (secondary)

Wilson, Richard Joseph The Relationship of Teacher Diagnostic and Prescriptive Skills to the Math Achievement of Mildly and Moderately Handicapped Special Education Students. (The Pennsylvania State University, 1983.) DAI 45A: 151-152; July 1984. (DA8409115)

The two teacher skills were not significantly correlated. Teachers' prescriptive skill was negatively correlated with achievement gain, but diagnostic skill was not. (elementary?)

Witthuhn, Janet Lee. Patterns of Student Performance on Mathematics Strands for American Indians and Others in a Large Urban School District. (University of Minnesota, 1984.) DAI 45A: 1324; November 1984. (DA8418554)

Patterns of relative strengths and weaknesses for each ethnic group were determined. (grades K, 1, 2, 4)

Woods, James Edward. The Effects of Three Methods of Sequencing Programming Lessons and Algebra I upon Achievement, Programming Ability, and Comprehension of Variables. (Georgia State University-College of Education, 1983.) DAI 44A: 3313-3314; May 1984. (DA8403351)

No significant relationship was found between the method of sequencing and achievement. (grade 8)

Worley, William Richard. The Effect of Television Viewing on Cognitive and Noncognitive Student Outcomes. (The Pennsylvania State University, 1984.) DAI 45A: 1609-1610; December 1984. (DA8419699) (grades 5, 8, 11)

Wright, Pamela A. A Study of Computer Assisted Instruction for Remediation in Mathematics on the Secondary Level. (Pepperdine University, 1983.) DAI 45A: 1063; October 1984. (DA8412629)

Computer-assisted instruction produced significantly higher

achievement than conventional instruction. (secondary)

Young, Raymond Brandon. An Introductory Calculus Course for Management Students. (Florida Atlantic University and University of Central Florida, 1984.) DAI 45A: 778; September 1984. (DA8414574)

The group given an experimental course scored significantly higher than the group having the conventional course. (college)

Zirkin, Barbara Gottlieb. Item Bias on the California Achievement Tests Using High Ability Males and High Ability Females. (The Johns Hopkins University, 1984.) DAI 45A: 1102; October 1984. (DA8415636) (grade 5)

Zjawin, Dorothy Arlene. A Clinical Investigation of a Solution of a Soma Cube Problem With and Without Assistance for Twelve to Fourteen-Year-Old Subjects. (Rutgers University The State U. of New Jersey (New Brunswick), 1983.) DAI 45A: 445; August 1984. (DA8411010)

Verbal and pictorial clues did not significantly improve the performance of groups given or not given cues. (ages 12-14)

Journals Searched

Journals indicated by an asterisk were searched page by page. For the remainder, either one or more issues could not be searched or articles were located through the use of Current Index to Journals in Education (CIJE) or Psychological Abstracts. The number in parentheses indicates the number of references listed.

* Alberta Journal of Educational Research (2)

* American Educational Research Journal (15)

* American Journal of Mental Deficiency (2)

American Mathematical Monthly (0)

Analysis and Intervention in Developmental Disabilities (1)

* Arithmetic Teacher (16)

* Australian Mathematics Teacher (1)

* British Journal of Educational Psychology (6)

* Child Development (12)

Cognitive Psychology (0)

Cognitive Science (0)

* Cognition and Instruction (5)

College Mathematics Journal (0)

Computers in the Schools (1)

* Contemporary Education (0)

Counseling and Values (1)

Developmental Psychology (2)

Developmental Review (1)

* ECTJ (0)

* Educational and Psychological Measurement (3)

Educational Evaluation and Policy Analysis (1)

Educational Leadership (0)

* Educational Research (4)

* Educational Researcher (1)

* Educational Studies in Mathematics (10)

* Educational Technology (5)

* Elementary School Journal (10)

Exceptional Children (6)

Focus on Learning Problems in Mathematics (5)

For the Learning of Mathematics (1)

Genetic Psychology Monographs (3)

Harvard Educational Review (1)

* Intelligence (6)

International Journal of Mathematics Education in Science and Technology (1)

International Review of Applied Psychology (1)

* Journal for Research in Mathematics Education (18)

Journal of Applied Behavior Analysis (1)

Journal of Computers in Mathematics and Science Teaching (5)

Journal of Counseling Psychology (1)

* Journal of Curriculum Studies (1)

* Journal of Educational Measurement (3)

Journal of Educational Psychology (14)

* Journal of Educational Research (14)

* Journal of Experimental Child Psychology (5)

* Journal of Experimental Education (4)

Journal of Experimental Psychology: Learning, Memory, and Cognition (3)

Journal of General Psychology (1)

Journal of Genetic Psychology (5)

Journal of Negro Education (1)

Journal of Personality and Social Psychology (1)

Journal of Research in Science Teaching (2)

Journal of Science and Mathematics Education in S.E. Asia (2)

* Journal of School Psychology (0)

Journal of Social Psychology (1)

Journal of Visual Impairment and Blindness (1)

Mathematics and Computer Education (0)

* Mathematics in School (9)

* Mathematics Teacher (2)

New Directions for Child Development (1)

Psychological Bulletin (0)

* Psychological Reports (8)

* Psychology in the Schools (11)

Reading Research Quarterly (1)

* Review of Educational Research (2)

Roeper Review (1)

* School Science and Mathematics (10)

Science Education (1)

Scientific American (1)

Index

This index is designed to help the reader locate references to designated mathematical topics. Not all studies are included, nor is the cross-referencing exhaustive. The studies have been grouped by articles and dissertations; level is indicated by E, elementary; S, secondary; and C, college and other postsecondary.

Achievement

Articles

Battista and Steele	E
Bloland and Michael	S
Carpenter et al.	E/S
Carr and Katterns	E/S
Coates and Lewis	E
Dye	E
Edge and Friedberg	C
Edwards	S
Ervin et al.	C
Ethington and Wolfle	S
Flexer	S
Foxman and Ruddock	E/S
Foxman et al.	E/S
Fredrick et al.	C
Gratz and Pulley	S
Harty et al.	E
Hess et al.	E
Horn and Walberg	S
Joffe and Foxman	E/S
Jones et al.	E/S
Langer et al.	E/S
Matthews et al.	E/S
May and Welch	E
Miller and Bizzell	S
Minato and Yanase	S
Monk and Ibrahim	S
Newman (b)	E/S
Obrzut et al.	E
Olson	?
Orton	S/C
Phillips and Marvelly	E
Ruddock et al.	E/S
Sassenrath et al.	S
Schneider and Treiber	E
Veldman and Sanford	S
Wainer	S
Witthuhn	E
Wood et al.	S

(Achievement - continued)

Dissertations

Abdulhadi	E/S
Allen, D.	S
Allen, O.	S
Blackwell	S
Bloland	S
Blum-Zorman	E
Bonham	S
Bracy-Nipper	S
Corbo	E/S
Cunningham	S
Davis, G.	E
Dhompongsa	S
Gallimore	E
Goodin	E
Grady	C
Griffin, '.	E
Guth	E
Harmon	C
Holloway	C
Jackson	E
Kanarian	S
Kaufman	E
Khorrami	S
Knight	E
Krieger	E
Kroen	S
McKenzie, L.	E
O'Brien	E
Owings	C
Rayborn	E
Reusing	S
Rice	S
Rubenzer	E
Salehi	E/S
Seglin	C
Shepley	C
Shibata	E
Smuckler	E
Tepper	S
Troxel	E
Vandivier	E
Vaughn	E/S
Vecchiotti	E
Weiner	S
Wilson	E
Zirkin	E

Algebra

Articles

Bernard and Bright	-
Bloland and Michael	S
Choroszy et al.	C
Flexer	S
Monk and Ibrahim	S
Powers et al.	S
Seiffert and Beck	S
Sleeman	S

Dissertations

Bennett, J.	S
Bloland	S
Calamari	S
Cunningham	S
Endsley	S
Mrosla	S
Muzik	S
Noonan	S
Pierce	S
Tepper	S
Wilde	S
Woods	S

Arithmetic Operations

Articles

Baroody (a, c)	E
Baroody and Gannon	E
Behr et al.	E
Bell et al.	E/S
Campbell	E
Carpenter and Moser	E
Carpenter et al.	E/S
Carr and Katterns	E/S
Darch et al.	E
Driscoll	E
Dudley	E
Hiebert	E
Hunting	E/S
Lessen and Cumblad	E
Marshall	E
Miller et al.	C
Muth	E
Rogers	E
Ruddock et al.	E/S
Russell and Ginsburg	E
Sadowski and McIlveen	E

(Arithmetic Operations - continued)

Sai and Inder	E
Schunk	E
Suydam (b, g)	E
van den Brink (a)	E

Dissertations

Amburgey	E
Bath	-
Beal	E
Bott	E
Brown, K.	E
Bumgarner	E
Cebulski	E
Cobb	E
Cooke	E
Edwards	?
Eichholz	E
Ferrucci	E
Humphrey	E
Luckinich	E
Majers	C
Nelson, G.	E
Paulson	E
Scheu	S
Shu	E
Steinberg	E
Tyderle	E

Attitudes and Anxiety

Articles

Burton	S
Chapman et al.	E
Choroszy et al.	C
Clarkson and Leder	S
Corbitt	S
Dalton and Hannafin	S
Fulkerson et al.	C
Furnham	S
Griswold	E
Joffe and Foxman	E/S
Levitt and Hutton	C
Lockheed and Harris	E
Marjoribanks	E
Marsh and O'Neill	S/C
Marsh et al.	E
Menis	S
Minato and Yanase	S

(Attitudes and Anxiety - continued)

Newman (b)	E/S
Parsons et al.	S
Powers and Rossman	C
Powers et al.	S
Reyes	E
Richards et al.	E
Rohrkemper and Bershon	E
Russell	S
Sjoberg	S
Steele et al.	E
Suydam (i)	E
Trueman	-

Dissertations

Blackburn	S
Corbo	E/S
Corkery	E/S
Davis, A.	S
Druva	C
Endsley	S
Fitzgerald	C
Goldstein	S
Haraden-Auger	C
Hayes	E
Houck	E/S
Jones	S
Kerns	S
Ley	E
Maleki	C
Probert	C
Rubenzer	E
Saltoun	E
Schneider	S
Silcock	S
Sileo	E
Simmons	E
Van Overmeer	S
Wachs	E
Whitfield	S/C

Calculators and Computers

Articles

Adelson	C
Battista and Krockover	E
Battista and Steele	E
Bear	E/S
Becker (a, b, c)	E/S
Clements	E

(Calculators and Computers - continued)

Dalton and Hannafin	S
Fahy	C
Griswold	E
Menis	S
Schulz	C
Steele et al.	E
Stephens	C
Suydam (h)	E
Tatsuoka	S
Taylor et al.	E

Dissertations

Abram	E
Al-Hareky	E
Armstrong	S
Austin	E
Bailey	E
Bayman	C
Blazejewski	E
Bumgarner	E
Calamari	S
Dvarskas	E/S
Englebert	S
Fernsler	E
Gallitano	S
Grossman	C
Halasz	?
Hawley	E/S
Horner	S
Humphrey	E
Jones	S
McDonald	C
Melkus	C
Miller, M.	C
Miller, S. W. H.	E/S
Milojkovic	E
Mitchell, M.	E
Miura	E/S
Moore, M.	E
Mullen	C
Nelson, G.	E
Noonan	S
Overdorf	S
Rice	S
Rose, N.	E
Schonemann	S/C
Shu	E
Whitfield	S/C
Woods	S
Wright	S

Cognitive Style

Articles

Hill and Redden	E
Licht and Dweck	E

Dissertations

Akerstrom	S
Blum-Zorman	E
Cunningham	S
Endsley	S
Griffin, C.	E
Harmon	C
Horner	S
Kunka	E
McDonald	C
Sohaili	E

Diagnosis and Remediation

Articles

Baroody (c)	E
Bell et al.	E/S
Berry et al.	C
Carter	E
Croie and Krehbiel	E
Enochs and Gabel	E
Foxman and Ruddock	E/S
Kulik and Kulik	-
Lindsey and Armstrong	E/S
Loranger et al.	S
Maher	E/S
Rohrkemper and Bershon	E
Ruddock et al.	E/S
Russell and Ginsburg	E
Russell et al.	S/C
Sadowski and McIlveen	E
Sapp et al.	E
Seddon et al.	S
Sheley	E
Sleeman	S
Stockard and Wood	S
Suydam (e)	E/S
Tatsuoka	S
Underhill et al.	E
Veldman and Sanford	S

(Diagnosis and Remediation - continued)

Dissertations

Banks	S
Bennett, A.	E
Bonner	E
Burke	E
Cebulski	E
Christy	E/S
Cook	S
Cooke	E
Doyen	E
Ferrucci	E
Grady	C
Hawley	E/S
Lara	E
Levner	E
McDonald	C
Miller, K.	C
Miller, S. W. H.	E/S
Mrosla	S
Munyofu	C
Narayanian	E/S
Pace-Chappell	E/S
Paulson	E
Radlinski	E
Rhodes	C
Ricketts	E
Rose, H.	E
Rundell	E
Scheu	S
Sensor	S
Shinsky	E
Staley	C
Stubbs	E
Sun	E
Test	C
Thomas	C
Wilson	E
Wright	S

Ethnic and Social Variables

Articles

Atwater and Simpson	C
Badgett et al.	C
Bradley	-
Burton	S
Carpenter et al.	E/S
Christie et al.	E
Clute	C
Croie and Krenbiel	E

(Ethnic and Social Variables - continued)

Cuevas	-
Gersten and Carnine	E
Gratz and Pulley	S
Hinojosa and Miller	S
Johnson	-
Jones et al.	E/S
Langer et al.	E/S
Loranger et al.	S
Maddux et al.	E
Marjoribanks	E
Matthews	-
Matthews et al.	E/S
McGue et al.	C
Meyer	-
Miller and Bizzell	S
Phillips and Marvelly	E
Powell and Steelman	S
Powers and Rossman	C
Sapp et al.	E
Schneider and Byrne	E/S
Smith	C
Stevenson and Fantuzzo	E
Suydam (c)	E
Taylor et al.	E
Trueman	-
Tsang	-
Valverde	-
Wainer	S
Witthuhn	E
Wolk	E/S
Wood et al.	S

Dissertations

Bath	-
Blackman	C
Blackwell	S
Blumhagen	S
Bonham	S
Busby	S
Colson	E
Cooper	C
Corkery	E/S
Craig	S
Davis, A.	S
Delcamp	E
DeLoach	E
DeRusha	E
Edwards	?
Furman	C

(Ethnic and Social Variables - continued)

Guth	E
Houck	E/S
Hughes	E
Jackson	E
Longshore	S
Miller, S. F.	S
Monaco	S
Mrosla	S
Mullen	C
Nicholsonne	E
Oishi	E
Pace-Chappell	E/S
Porter	E
Rose, H.	E
Rothman	E
Saltoun	E
Shibata	E
Shinsky	E
Sileo	E
Smuckler	E
Sun	E
Tepper	S
Thiel	E
Vandivier	E
Weiner	S
Witthuhn	E

Geometry and Measurement

Articles

Acredolo et al.	E
Bethell-Fox et al.	S
Bregman et al.	E
Burton	S
Cooper and Shepard	?
Enochs and Gabel	E
Ethington and Wolfle	S
Foxman and Ruddock	E/S
Hart	S
Hiebert	E
Hill and Redden	E
Kail et al.	C
Kyllonen et al.	S
Levin et al.	E/S
McGonigle and Chalmers	E
McGue et al.	C
Mendelson	E/C
Olson	?
Pattison and Grieve	S
Peterson et al.	E

(Geometry and Measurement - continued)

Poltrock and Brown	C
Rosser et al.	E
Seddon et al.	S
Silverman et al.	E

Dissertations

Austin	E
Brie	E
Calamari	S
Davis, G.	E
Donoso de Zuanic	S
Fandreyer	S
Goldberger	E
Halasz	?
Horner	S
Landau	E/S
Mansfield	E/S
Meehan	S
Min	E/C
Mullen	C
Rayer	C
Schonemann	S/C
Test	C
Zjawin	S

Learning

Articles

Arlin (a, b)	E
Ashcraft et al.	E/C
Bethell-Fox et al.	S
Bisanz et al.	E/S/C
Cooper and Shepard	?
Dalton and Hannafin	S
Guskey	E/S
Hiebert	E
McGue et al.	C
Miller et al.	C
Olson	?
Poltrock and Brown	C
Schunk	E
Slavin and Karweit	S

Dissertations

Artzt	S
Bumgarner	E
Burke	E
Cooke	E

(Learning - continued)

Davidson	E
Gatipon	E
Kazimi	E
Maynard	C
Monaco	S
Moore, M.	E
Mowery	E
Noonan	S
Prendergast	C
Reif	C
Srivastava	C
Stubbs	E

Learning Disabilities

Articles

Dickinson and Adcox	E
Ivarie et al.	E/S
Lessen and Cumblad	E
Lindsey and Armstrong	E/S
Russell and Ginsburg	E
Russell et al.	S/A
Sapp et al.	E
Schneider and Byrne	E/S
Slavin et al. (c)	E

Dissertations

Abbott	S
Bott	E
Bracy-Nipper	S
Braude Kremberg	E
Breen	E
Davis, G.	E
Doyen	E
Englebert	S
Horner	S
Kunka	E
Ley	E
Montague	S
Nelson, G.	E
Rezba	E
Riley	E
Shinsky	E
Spatt	S
Trenholme	E/S
Troxel	E

Materials

Articles

Behr et al.	E
Carpenter and Moser	E
Carr and Katterns	E/S
Clements	E
Dreyfus and Eisenberg	S
Driscoll	E
Hunting	E/S
Kingma and Koops	E
Larson and Slaughter	E
Maddux et al.	E
Morehead	E
Moyer et al. (b)	E/S
Muth	E
Nicholson	S
Rogers	E
Russell et al.	S/C
Sai and Inder	E
Smith	C
Suydam (a)	E
Thomas and Grouws	C

Dissertations

Al-Hareky	E
Amburgey	E
Brie	E
Canny	E
Elmoghirah	E
Esposito	C
Hall	E
Kunka	E
Levner	E
Maynard	C
Meehan	S
''tchell, D.	C
Moore, M.	E
Mowery	E
Nelson, G.	E
Pierce	S
Rasch	E
Tyderle	E
Worley	E/S
Zja in	S

Number and Numeration

Articles

Baroody (a, b)	E
Baroody and Gannon	E
Bergan et al.	E

(Number and Numeration - continued)

Briars and Siegler	E
Callahan and Clements	E
Clements	E
Cowan	E
Kingma and Koops	E
McConigle and Chalmers	E
Michie	E
Newman and Berger	E
Poltrock and Schwartz	C
Saxe et al.	E
Sindelar et al. (a, b)	E
Underhill	E
van den Brink (b)	E

Dissertations

Beal	E
Brie	E
Craine	E
Evans	E
Goldberger	E
Klein	E

Organizing for Instruction

Articles

Clute	C
Gersten and Carnine	E
Larson and Slaughter	E
Lockheed and Harris	E
Maher	E/S
Meyer	-
Moyer et al. (b)	E/S
Quinn et al.	E
Russell et al.	S/C
Schneider and Byrne	E/S
Sindelar et al.	E
Slavin and Karweit	S
Slavin et al. (a, b, c)	E
Trafton	E
Wang and Birch (a, b)	E
Webb (a, b)	S

Dissertations

Abram	E
Artzt	S
Bott	E
Bouknight	C
Brown, V.	S
Burke	E
Butler	E

(Organizing for Instruction - continued)

Chew	C
Clithero	S
Colson	E
Englebert	S
Fandreyer	S
Gatipon	E
Gilbert-Macmillan	E
Griffin, R.	E
Grossman	C
Majers	E
McComb	C
McDonald	C
McKenzie, D.	S
McKenzie, L.	E
Miller, S. W. H.	E/S
Munyofu	C
Mussnug	C
Muzik	S
Nicholsonne	E
Oishi	E
Palmer	S
Roberts	C
Scheu	S
Schonemann	S/C
Shu	E
Sohaili	E
Treadway	C
Tyderle	E
Wright	S

Problem Solving

Articles

Bell et al.	E/S
Briars and Larkin	E
Campbell	E
Carpenter and Moser	E
Carpenter et al.	E/S
Charles and Lester	E/S
Darch et al.	E
Foxman et al.	E/S
Fulkerson et al.	C
Hill and Redden	E
Kulik and Kulik	-
Marshall	E
Moyer et al. (a, b)	E/S
Muth	E
Silver and Thompson	E
Suydam (d)	E
Thomas and Grouws	C
Uprichard et al.	E

(Problem Solving - continued)

Dissertations

Akerstrom	S
Al-Dokheal	E
Amburgey	E
Blumhagen	S
Druva	C
Dvarskas	E/S
Esposito	C
Falakdine	S
Gage	C
George	E
Gilbert-Macmillan	E
Goldberger	E
Gonzalez	E
Gordon	C
Halasz	?
Jimenez	E
Keller	S
Klein	E
Kotovsky	C
Kuzminski	E
Landau	E/S
Longshore	S
Luckinich	E
Majers	E
Mawer	?
Miller, S. F.	S
Monaco	S
Montague	S
Narayanian	E/S
Orehovec	-
Payne	C
Quinto	C
Roberts	C
Sairafi	E
Shinatrakool	S
Steinberg	E
Sun	E
Treadway	C
Trenholme	E/S
Wilde	S
Zjawin	S

Sequencing

Articles

Arlin (a, b)	E
Clements	E
Cowan	E
Dye	E
Gullo and Clements (b)	E

(Sequencing - continued)

Ivarie et al.	E/S
Langer et al.	E/S
May and Welch	E
McKernan	S
Miller and Bizzell	S
Mohan	E
Monk and Ibrahim	S
Niklason	E
Obrzut et al.	E
Peterson et al.	E
Ravn and Gelman	E
Sandoval	E
Saxe et al.	E
Sieffert and Beck	S
Sindelar et al. (a, b)	E
Solnick and Baer	E
Studwell and Moxley	E
Taylor et al.	E

Dissertations

Abdulhadi	E/S
Akridge	E/S
Allen, O.	S
Alston	E
Buescher	C
Cain	E/S
Cleon	S
Dhompongsa	S
Faitos	E
Goodin	E
Hughes	E
Humphrey	E
Kuzminski	E
Levner	E
Manning	S
Muzik	S
Nabors	E
Nicholson	S
Palmer	S
Ponte	S
Radlinski	E
Rasch	E
Rhodes	S
Shibata	E
Stanley	E
Thieme-Busch	S
Townsend	C
Wheeler	E
Woods	S
Young	C

Sex Differences

Articles

Agris and Austin	C
Badgett et al.	C
Burton	S
Callahan and Clements	E
Carpenter et al.	E/S
Chapman et al.	E
Deboer	C
Edwards	S
Ethington and Wolfle	S
Fulkerson et al.	C
Gullo and Clements (a)	E
Hill and Redden	E
Joffe and Foxman	E/S
Kail et al.	C
Leder	S
Licht and Dweck	E
Lockheed and Harris	E
Marshall	E
Martin and Light	C
Morehaad	E
Newman (a)	S
Onyehalu	E
Parsons et al.	S
Pattison and Grieve	S
Scott	E/S
Stockard and Wood	S
Webb (a)	S

Dissertations

Abram	E
Al-Hareky	E
Blackman	C
Cook	S
Corkery	E/S
Davis, G.	E
Dick	C
Endsley	S
Gallitano	S
George	E
Goldberger	E
Goldstein	S
Haraden-Auger	C
Houck	E/S
Jones	S
Kanarian	S
Kaufman	E
Landau	E/S
Longshore	S
Meehan	S

(Sex Differences - continued)

Miura	E/S
Monaco	S
Mrosla	S
Oguntebi	E/S
Probert	C
Reusing	S
Schneider	S
Silcock	S
Sileo	E
Tepper	S
Weiner	S
Zirkin	E

Test Analysis

Articles

Bloland and Michael	S
Choroszy et al.	C
Dash and Maguire	E
Eaves and Simpson	S
Griffiths and McLone (a, b)	C
Kingma (a)	E
Kulik et al.	-
Levitt and Hutton	C
Lindsey and Armstrong	E/S
Powell and Steelman	S
Powers et al.	S
Yore and Ollila	E

Dissertations

Bennett, J.	S
Bratina	C
Cook	S
DeRusha	E
Heikkila	E/S
Jolly	?
Knight	E
Lindsey	E
Nelson, B.	C
Prendergast	C
Mayborn	E
Rayer	C
Rubenzer	E
Saltoun	E
Simmons	E
Spatz	S
Vejdani-Jahromi	E
Zirkin	E